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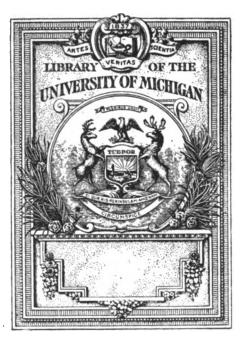
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THE AMERICAN MUSEUM OF NATURAL HISTORY

Vol. XVII



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ANTHROPOLOGICAL PAPERS OF THE AMERICAN MUSEUM OF NATURAL HISTORY

VOL. XVII, PART I

RIDING GEAR OF THE NORTH AMERICAN INDIANS

BY

CLARK WISSLER

NEW YORK
PUBLISHED BY ORDER OF THE TRUSTERS
1915

American Museum of Natural History.

PUBLICATIONS IN ANTHROPOLOGY.

In 1906 the present series of Anthropological Papers was authorized by the Trustees of the Museum to record the results of research conducted by the Department of Anthropology. The series comprises octavo volumes of about 350 pages each, issued in parts at irregular intervals. Previous to 1906 articles devoted to anthropological subjects appeared as occasional papers in the Bulletin and also in the Memoir series of the Museum. A complete list of these publications with prices will be furnished when requested. All communications should be addressed to the Librarian of the Museum.

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RIDING GEAR OF THE NORTH AMERICAN INDIANS.

By Clark Wissler.

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Fig. 1. Camp Scene showing a Saddle staked down while the Rawhide Cover dries and sets. Painting by Catlin in the Mills Collection.

Introduction.

The investigation of the horse culture complex among the American Indians was undertaken to discover the procedure in a concrete case of culture diffusion, an important anthropological problem of the day. One of the most difficult tasks confronting the anthropologist is the elucidation of the precise complexes by which various traits of culture are produced. Since there is on every hand abundant evidence that many traits of culture are borrowed, or diffused, over large areas, the study of typical concrete instances of diffusion are of the first importance. A number of European anthropologists have been so impressed with the significance of diffusion. that they have developed from it a theory to account for the origin of culture This theory is usually known as that of single origin as opposed to the theory of independent invention. The former asserts that all important traits of culture were invented but once and subsequently gradually diffused; the latter, that the same invention was made independently in many parts of the world, whence its diffusion is but apparent. As everyone knows, the discussion of such problems comes to naught unless concrete cases can be investigated.

The horse culture complex of the American Indian offers an excellent opportunity to study diffusion, because most of the essential facts are obtainable. The horse was introduced by Europeans at an early date and spread ahead of interior exploration. In particular, many of the tribes west of the Mississippi River became horsemen before their discovery by Europeans. The history of horse introduction is briefly outlined in the American Anthropologist, Vol. 16, No. 1, pp. 1-25. The investigation here reported is the intensive study of collections of riding gear and horse-using appliances to be found in anthropological collections. The material available in the Museum gives us a representative series for each important tribe in the horse-using area so that we may proceed in confidence.

A preliminary statement of the results attained in this study were published in the *Proceedings of the National Academy of Sciences*, Vol. 1, p. 254. In the selection and comparison of specimens the writer has been aided by Mr. William A. Sabine, assistant in the Museum, whose great knowledge of specimens and their distribution was indispensable to the task. Other acknowledgments are due to Mr. S. Ichikawa for the illustrations and to my secretary, Miss Bella Weitzner, for gathering reference material.

July, 1915.

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Fig. 2 (50-2289). A Shoshone Saddle.

FRAME SADDLES.

American Indian saddles are of two distinct kinds readily characterized by the names frame saddle and pad saddle, each representing quite distinct structural concepts.

The fundamental pattern of all the frame saddles we have seen is identical: viz., two parallel side bars, supporting two forked or bowed uprights (a pommel and a cantle), between which is suspended a hammock-like The side bars are of wood ranging in lengths from 31 to 55 cm. though of the sixty-six specimens examined fifty-one fall between 37 and 49 cm. and tend toward two norms, 42 and 48 cm. respectively; their widths average about 9 cm. and their thickness, 1 cm. Their forms vary somewhat but seem to be of four types, straight, curved, boat-shaped, and tree-shaped (like a shoe-tree), Fig. 3a, b, c, d. The ends are rounded and pierced with one or two holes for the girths. Tribal differences are not consistent but in the main the tree-shaped side bars are found in the Southwest among the Navajo, Jicarilla, and Hopi and are probably copies of modern trade saddles. The form appears in one specimen from the Sauk and Fox but not elsewhere. The boat-shaped bar is most pronounced in Mescalero saddles. Cheyenne, Blackfoot, Sarsi, Winnebago, Menomini, and Plains-Cree are The Shoshone are very slightly curved but the Crow and Dakota decidedly so. The Hidatsa-Mandan are both straight and curved. The number of holes in the ends tend toward uniformity, two for each, but the Ute and Shoshone usually have but one while the Cheyenne vary. In all cases, however, the number is the same in each saddle.

The bows or fronts of the saddles are not so uniform as the side bars, in fact presenting the greatest individuality of all parts. In general, however, they are of four types. The horn type is shown in Fig. 2 and is made of a single piece of wood with a curious prong under the pommel upon which the quirt and rope can be secured. This form occurs among the following tribes: Blackfoot, Crow, Cheyenne, Dakota, Mandan, Sarsi, Shoshone, Thompson, Ute, and Winnebago. In no case is it the only type of bow for the tribe, but is strongly developed among the Shoshone. One Blackfoot saddle (Fig. 6) has bows and cantle of antler which has been trimmed and apparently bent into the required shape.

In the above grouping we have taken all bows having the distinct hook, but in many cases the pommel itself was not of the Shoshone type.

The Y type of bow takes its form from the material. A forked piece of antler is trimmed as shown in Fig. 4. It is most strongly developed among the Cheyenne but occurs among the Crow, Dakota, Thompson.

Mandan-Hidatsa. An analogous form in wood is found among the Sauk and Fox, Winnebago, Menomini, Caddo, and Mescalero. It may be noted that the Ute, Shoshone, Blackfoot, and Sarsi do not have this form.

The bow type results from the use of a simple curved piece of antler,

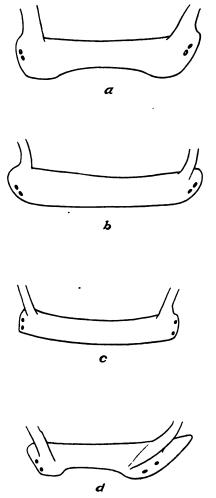


Fig. 3 (a, 50.1-6931; b, 50.1-465; c, 50.1-466; d, 50-6780). Side Bar Forms.

not a fork (Fig. 5). It occurs among the Shoshone, Ute, Cheyenne, Crow, Dakota, Mandan-Hidatsa, and Plains-Cree. Somewhat analogous forms in wood are found among the Hopi, Navajo, Taos, Sauk and Fox, and Menomini.

The angular type is found chiefly among the Navajo (Fig. 7). There is one specimen in the Ute collection but that is probably intrusive.



Fig. 4 (50-5526a). Saddle Bow of Antler. Cheyenne

CANTLES.

As a rule, the cantle of an Indian saddle is a duplicate of the bow. The horn type of bow is accompanied by a cantle of similar shape, but instead of the hook we find an eye for the support of the seat. There are a few saddles in which a Y-shaped bow is used with a simple bowed cantle, but these are not confined to a single tribe. The saddles of the Navajo and of the several divisions of the Apache as shown in the Figs. 7 and 3d are nearer to the types of modern saddles and present not only different forms for the cantle and bow but set them at different angles. However, a close inspection of all types of Indian saddles shows that in almost every case there is a slight difference in these angles, the bows tending to be vertical or even slightly inclined inward while the cantles incline outward. This shows that there was a definite concept as to the relations of these two parts.

SEATS.

All the frame saddles we have seen have the suspended seat, simply a broad band of skin supported by the bow and the cantle. Where the bow is supplied with a hook, this is passed through a hole in the skin, while the rawhide binding of the cantle has an eye through which a wooden pin is passed to hold the other end of the seat. With bows and cantles of the Y type, the ends of the seat are looped over the projecting parts while in case of the simple bows they are passed around the horn and sewed. The universality of this seat is shown by its use in the more modern forms of the



Fig. 5 (50.1-724). A Crow Saddle.



Fig. 6 (50.1-1069). A Blackfoot Saddle.

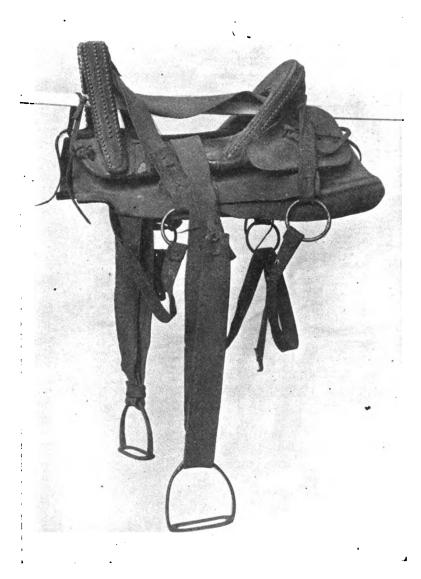


Fig. 7 (50.1-944). A Navajo Saddle.

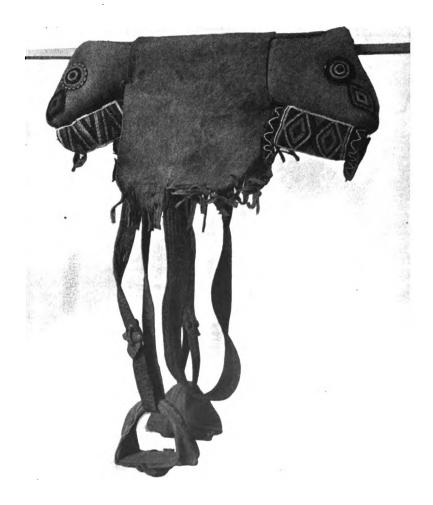


Fig. 8 (50.1-7515). A Pad Saddle. Dakota.

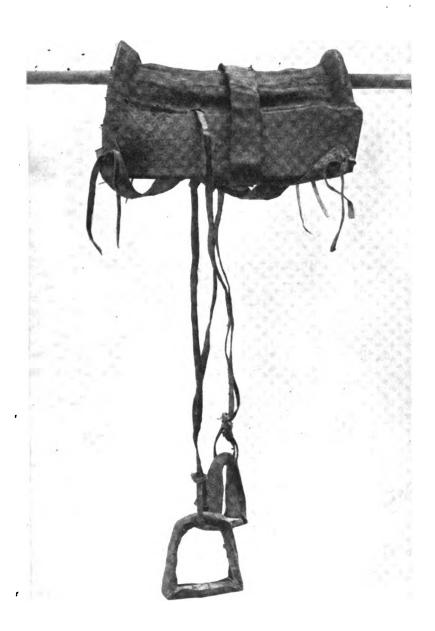


Fig. 9 (50.1-5481). A Mandan Saddle.

Southwest. In some cases frame saddles seem to have been used exclusively for packing and so were not provided with seats.

The fundamental principle of construction seems to be the binding of green or wet rawhide which as it dries, shrinks. In every case the whole surface of the frame is covered. That this is mechanically necessary is improbable and in Navajo saddles the frame is entirely covered with leather in such manner as to preclude any but conventional motives. It seems more likely that the practice of covering the entire frame was naïvely copied from leather-covered Spanish saddles. It is, of course, true that the use of rawhide would add strength to the frame but this could have been secured by binding at the joints. We have no data as to the manipulations in saddle construction but find in the Mills Catlin collection an interesting sketch (Fig. 1).

The pattern for the rawhide cover seems to have been the same everywhere and the seams were uniformly underneath and sewed with the same kind of stitch.

All saddles were provided with a single girth suspended in the middle by two straps as in Fig. 2.

PAD SADDLES.

Distinct from the frame saddle is the pad, simply a bag of soft skin stuffed with hair or other soft materials. The Dakota saddle may be taken as the type (Fig. 8).

In our collections are similar saddles from the Blackfoot, Mandan-Hidatsa, Plains-Cree, and Thompson. According to Henry ¹ the same type was used by the Assiniboine and Plains-Cree. In all we find essentially the same shape of pad, the strong transverse band of leather to which the girth and stirrups are fastened.

A somewhat different form of pad is found in the Southwest. From the White Mountain Apache we have a very crude pad of reeds covered with buffalo skin and Russell reports similar ones from the Pima.² One of more definite form was collected in San Ildefonso. In all of these, the girth is passed over the top.

A special variant of the frame saddle is found among the Mandan-Hidatsa and the Dakota of which the Mandan specimen (Fig. 9) may

¹ Henry and Thompson, New Light on the Early History of the Great Northwest, Edited by Elliott Coues, New York, 1897, 526.

² Russell, Frank, The Pima Indians (Twenty-sixth Annual Report, Bureau of American Ethnology, Washington, 1908), 113.

serve as the type. In this case the wooden side bars are set more nearly vertical than in other types. The bow and cantle are of curved horn and over all is stretched a skin covering.

STIRRUPS.

As a rule all Indian saddles are provided with stirrups. These, perhaps, more than saddles, exemplify the skill of the workman. A piece of wood about 1 cm. thick and 49 cm. long is cut as shown in Fig. 10. It is grooved as indicated and bent to the form in Fig. 10b. Over the overlapping arch is placed a rod or splint whose ends are secured by sinew usually underneath the foot rest. A strip of buffalo hide is then stretched around the outside

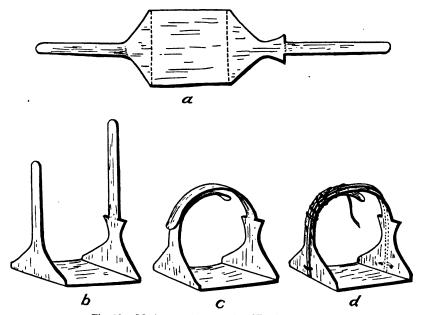


Fig. 10. Method of Constructing Wooden Stirrups.

and secured by lacing under the bottom or foot rest. In almost every specimen we have seen the form of this lacing is precisely the same. At the top of the stirrup the covering is carried entirely around the wooden arch and stitched underneath.

A comparative study of the stirrups in the collection indicates that Fig. 13 is the prevailing type in the Plains. For women's saddles among

the Shoshone, Crow, and Blackfoot, the shape is as shown in Fig. 11, but otherwise the structure is the same. In the Hidatsa-Mandan and Thompson collections there is a variant as shown in Fig. 12.

Teit 1 described a stirrup made from a block of wood. This is almost

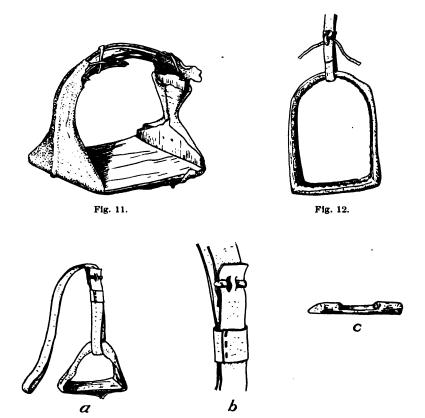


Fig. 13.

Fig. 11 (50-1162). Detail of Shoshone Stirrup.

Fig. 12 (16-9152). A Thompson Stirrup.

Fig. 13 (50-3032b). Detail of Attachment for a Stirrup. Dakota.

identical with a trade stirrup and may, therefore, be considered a direct copy. The saddles from the Navajo and other Southwestern peoples have iron trade stirrups; Russell, however, collected a specimen from the Pima which is apparently made of bent wood.²

* Russell, ibid., 113.

¹ The Thompson Indians of British Columbia (Memoirs, American Museum of Natural History, vol. 2, part 4, New York, 1900), 258, Fig. 244.

ł

The stirrup is supported by a strap or thong passed over the side bar and through the stirrup. In most cases it rests free upon the side bar so that it may slide forward and backward as desired. It is only in a few Mandan-Hidatsa saddles that a hole is made in the side bar through which the stirrup is passed. In but one Dakota specimen have we found any device for raising or lowering the stirrup except the simple retying of the strap. In this case a kind of toggle has been devised as a substitute for a buckle (Fig. 13).

ACCESSORIES.

Many saddles, especially those used by women, are provided with cruppers. Among the Sarsi, Blackfoot, Crow, and Shoshone¹ these are large and ornamental as shown in Figs. 14 and 15. It is interesting to note that we have two specimens from Guatemala of the same general type, Fig. 16. The Spanish horsemen in the days of the Conquest often used very elaborate cruppers and back harness and also highly decorated collars. Of the latter, a form is sometimes found with women's saddles among the Shoshone and Crow.

A single cinch is used and so adjusted as to bear upon the middle of the saddle (see Fig. 2). It is usually a strip of hide but sometimes is woven of hair. On the Thompson specimen (Fig. 17), y-shaped pieces of antler are used to join the cinch to the supporting straps and a short piece of antler inserted in the end of the cinch to serve as a ring.

In some cases the side bars are provided with fixed pads, but it was usual to place loose pads or blankets under the saddle. A special ornamental blanket upon which the saddle rests is used by women among the Dakota, Ute, Crow, and some Shoshone (Fig. 18).

A few saddle bags occur in the collections (Fig. 19) but their exact distribution cannot be determined.

Various ornamental attachments are found, the most typical of which are shown in the figure. The high pommels are usually trimmed with long fringes of buckskin. Among the Ute, Shoshone, and Crow pendant beaded flaps are often seen. In a few cases the bows and cantles are studded with brass nails which among the Navajo seems to be a prevailing style. While the pommel obviously offers opportunity for realistic carving, examples are rare. Figs. 20 and 21 present the only cases noted.

Beaded pendants are usual on the stirrups used by women among the Ute, Shoshone, and Crow (Fig. 22).



¹ See this series, vol. 5, 94.

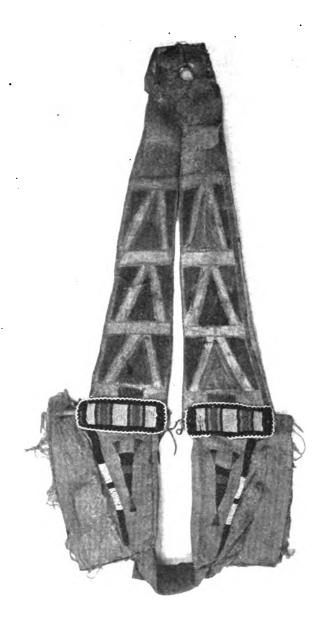


Fig. 14 (50-2291). Crupper for a Saddle. Shoshone.

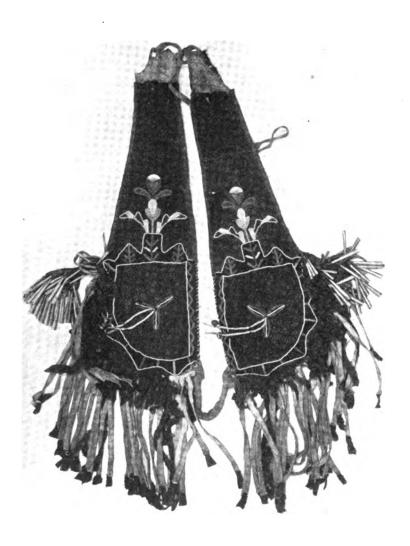


Fig. 15 (50.1-1067). Crupper for a Saddle. Blackfoot.



Fig. 16 (65-2177). Crupper for a Saddle. Guatemaia.

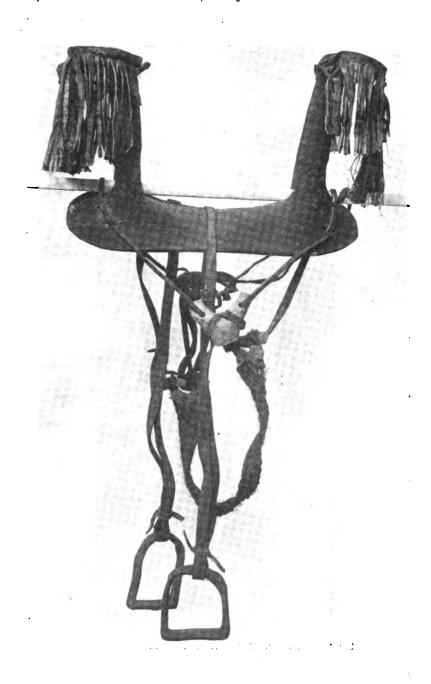


Fig. 17 (16-9152). Saddle with Native Attachments. Thompson.

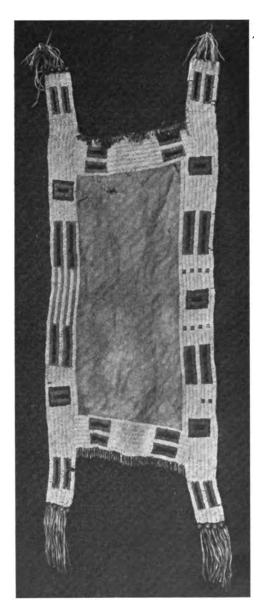


Fig. 18 (50.1-7503). Saddle Cloth of Buffalo Skin. Dakota.



Fig. 19 (1-2642). Saddle Bag of Buffalo Skin. Dakota.

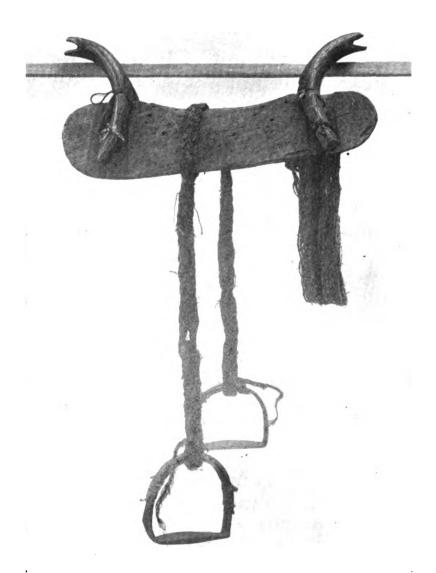


Fig. 20 (16-8710a). Saddle with Carved Antler Bow and Cantle fashioned and decorated to resemble Bird Heads. Thompson.



Fig. 21 (50-4848). Wooden Saddle with Carved Cantle. Menomini.



Fig. 22 (50.1-731b). Crow Stirrup.

QUIRTS AND ROPES.

For completeness some account of driving appliances may be added. The use of a spur is rare, the only native-made specimen we have seen was from the Pima.

Quirts were universally of the same general pattern throughout. One common form is shown in Fig. 23. The lash is inserted in the butt where it loops over a wooden pin. The smaller end is pierced and provided with a wrist guard, or hanger. A number of wooden handles are found in the collections from the Kootenai, Blackfoot, and Dakota with the lash inserted in precisely the same manner, from which we infer that they are copies of the antler type. On the other hand, we note a number of larger flat club-shaped handles of wood with the lashes passed through a single transverse hole near the end as in Fig. 24. This illustration presents a special serrated form found chiefly among the Arapaho and Cheyenne. It is similar to the large ceremonial quirt carried in some forms of the grass dance. In the Southwest we sometimes find quirts of braided horsehair, but these are usually secured in trade.

One unusual specimen is of polished elkhorn (?) of the precise form shown in Fig. 25 and said to come from the Plains-Cree. Another striking handle is of carved wood and was collected in northeastern Oregon in 1882. It is probably from a Shahaptian tribe. It is doubtless copied from some other implement (Fig. 25).

Ropes were simple bands of buffalo hide or braided cords of hair or thongs.¹

BRIDLES.

So far as we know, the Indian did not use a bit of his own manufacture and seldom a bridle or halter. He controlled his mount by a cord looped around the lower jaw.² There are a few bridles in the collection of native leather and bearing trade bits, but they are obviously copied directly from modern commercial types. Some of the bits are of historical interest for they are quite like old Spanish types and may be of respectable age. In the Metropolitan Museum there are dated specimens of 1787 similar to Fig. 26a. In the Hispanic Museum are some similar to Fig. 26b dated 1600.

¹ This series, vol. 5, 96.

¹ This series, vol. 5, 96.

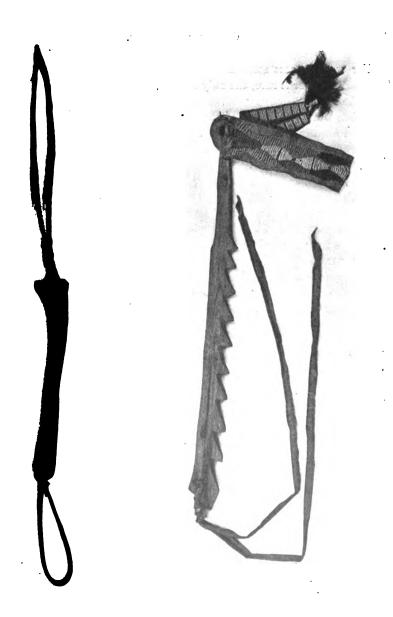


Fig. 23. Fig. 24. Fig. 23 (50-5). Typical Plains Quirt. Blackfoot. Fig. 24 (50.1-630). Wooden Handled Quirt. Cheyenne.

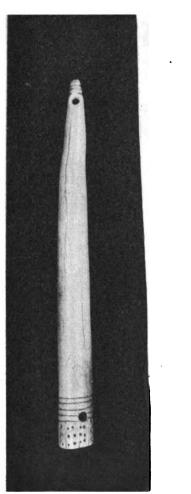




Fig. 25 (a, 50.1-7833; b, T-22150). Unusual Quirt Handles. a, polished antler; b, red cedar.

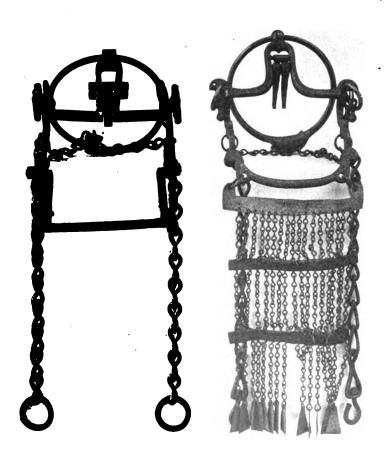


Fig. 26 (a, 50.1-6784; b, 50.1-726). Spanish Bits found among the Navajo and Crow respectively.

DISTRIBUTION OF TYPES.

In general, it appears that the saddles with high pommels as in Fig. 2 were used by women while men used either a pad or the low-bowed frame saddle. Yet, the pad was not exclusively for men, especially among the Dakota. So far as we have data, the highly decorated saddles of whatever model were used by women.

In the distribution of types one point is clear, the type of Fig. 2 is almost exclusively confined to the Ute, Shoshone, Shahaptian, and Crow. However, random specimens are found among the Blackfoot, Thompson, and other Salish and also among the Hidatsa who, no doubt, obtained them from the Crow. The stirrups of the Ute, Shoshone, and Crow, used by women, were also distinctive as to some details of form and decoration. Again, these are the people using the large decorated cruppers and collars, reminding one of types used in the days of knighthood. That these are not recent is made clear by Lewis and Clark, Cox, Franchère, etc. In late days we find the Navajo and the Southwest generally to incline decidedly toward trade models but that this was not formerly true is suggested by the illustrations in Whipple's report of 1855, showing Navajo riders with stirrups and saddles of the Shoshonean type.

Among the Comanche, Cheyenne, Arapaho, Dakota, Assiniboine, Mandan, and Cree, the frame saddles use bowed or y-shaped cantles and pommels of elkhorn. Farther east we find the Sauk and Fox, Winnebago, Menomini, and Caddo making a bow or rounded cantle of wood. According to Morgan this type was used by the Iroquois and certain remarks by Adair suggest the same style for the Southeastern tribes. Thus, we have the appearance of three geographical types ranging from south to north and radiating from the Mexican border. It is quite probable that these represent three different lines of diffusion for horse culture.

Now that our descriptive and analytic task has been performed we may turn to the problems leading to this preliminary work. The most fundamental problem is how the Indian came by the various elements of his horse culture complex. If we consider the mere possibilities of the case it is clear that having acquired the horse, he could have independently invented saddles, bridles, etc. On the other hand, it is also possible for him to have invented nothing whatever but to have taken over the whole complex from Europeans. Again, it is conceivable that we may find any degrees of compromise between these extremes in that some appliances were borrowed entire, some slightly modified, some more, some entirely original, etc. Since we cannot expect much in the way of definite historical



information on these points we must turn to the objective data in the preceding pages.

We have seen how surely the frame saddles were constructed according to one definite structural concept and how uniformly the three variants of this were distributed in geographical bands converging toward Mexico. In a former paper we have shown how the data for the diffusion of the horse was quite consistent with the conclusion that the source of Indian supply was Mexico and that the colonics of the Atlantic Coast were a negligible factor. It is therefore likely that definite structural concepts for riding gear came from the same source. The difficulty in this case is that we have so far no good data as to the types of saddles used by the Spaniards. Lewis and Clark give us an accurate description of the Shoshonean saddle and add that "it is made like the pack saddles in uce among the French and Spaniords." Adair comments upon the same type among the Southeastern tribes as follows: "the shape of it is so antiquated and mean, and so much like those of the Dutch West-Indians, that a person would be led to imagine they had formerly met, and been taught the art in the same school." In discussing the saddles of the Iroquois, Morgan says: "This is an Indian invention, but came originally from the west. It closely resembles the saddle of the native Mexicans in its general plan, but its pommel is not as high, and its side-pieces are longer." Also, Franchère observed the Shoshone type on the Columbia River: "The saddles for women differ in form, being furnished with the antler of a deer, so as to resemble the high pommelled saddle of the Mexican ladies."4 Noting that these observations cover almost a century preceding 1850 and are by men of wide experience in the country, we must give them great weight. They agree in asserting specific resemblances to southern types and on the whole Spanish types.⁵ Mr. Mooney informs me that according to his data one of the chief reasons why the Southern Plains tribes took Mexican captives was that they were better skilled in the care of horses and in metal work. Doubtless this developed as an early concomitant of horse raiding and as such is a suggestion as to how directly all parts of the horse culture complex were taken over from Spanish settlements.

All these data are rather against any important inventions of the Indian;

¹ Lewis and Clark, Original Journals of the Lewis and Clark Expedition (Thwaites Edition, New York, 1905), vol. 3, 31.

² Adair, James, The History of the American Indians, London, 1775, 425.

Morgan, Lewis H., League of the Ho-de'-no-sau-nee or Iroquois, Rochester, 1854, 377.
 Franchère, Gabriel, Narrative of a Voyage to the Northwest Coast of America, etc.

⁽Early Western Travels, Thwaites Edition, New York, 1854, vol. 6), 341.

5 According to Col. R. T. Dodge, Our Wild Indians (Hartford, 1885), 338, the Indian cinched his saddle by the Mexican method.

but we must not overlook the fact that while we have a fine series of specimens from the Indians we have very little of the kind from the period of Spanish colonization. The modern Mexican saddle with its high pommel and horn appears to have had its counterpart in the days of the Conquest; in fact numerous native drawings appear in the later codices and a single sketch of a saddled horse in the Codex Baranda, Fig. 27. In these we see

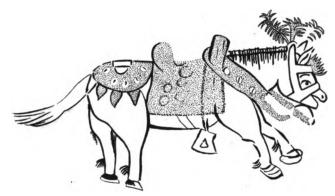


Fig. 27. Sketch found in the Codex Baranda.

the prominent pommels and cantles, the Shoshone type of stirrup, the wide crupper, and a collar like those of the Crow. The prevailing Mexican type of some years ago is said to have had a high pommel and a round-headed projecting cantle. The sketches of Southwestern Indians in Whipple show a cantle that fits this description and which also has its prototype in our collections from the northern tribes.

In Europe the English have used a simple saddle for several centuries in contrast to the high pommel and cantle of the continent and this latter also seems to prevail still in Africa and Asia. The English colonies brought with them the small flat English saddle which has been the prevailing type east of the Mississippi but westward in the cattle country, the large Mexican type is still in use, with the lasso or rope, large spurs, etc. It is interesting to note how tenaciously the type introduced by the Spanish colonies and first diffused by the Indian, has held sway in the whole region west of the Mississippi. No doubt the same causes that tended to diffuse horse culture among the Indians operated with the American settlers in so far as they preferred to adopt a culture trait already in function rather than to devise

¹ Report upon the Indian Tribes (Reports, Explorations and Surveys, 1853-4, vol. 3, part 3, Washington, 1855).

a new one. Perhaps we have here a good example of how the environment may hold a culture trait to a certain area in spite of racial displacements.

It may be worth while comparing the horse culture of the South American Indian since it must also have been initiated by the Spaniards. The data at hand are meager enough but yet sufficiently positive. In Ratzel's "History of Mankind" (vol. 2, 82) are illustrations of the saddle, stirrup, bit, and spur used in Patagonia. The saddle is of wood but quite like the North American type, Fig. 5. The method of fastening the stirrup is the same. There is a good description in Wood's "Uncivilized Races":—

The saddle is made of four pieces of wood, firmly lashed together with raw-hide thongs, and both the front and back of the saddle are alike. From the sides depend the stirrups, which are appended to leathern thongs, and are made in a very simple manner. A hole is made at each end of a stout leathern strap, and a short piece of stick about half an inch in diameter is thrust through them, being retained in its place by a groove near each end. The strap being attached by its middle to the thongs which act as stirrup-leathers, the article is complete.

As the space between the grooves is rather less than three inches, it necessarily follows that the Patagonian horseman can only insert his great toe in the stirrup. This, however, is sufficient hold for him, as he is an admirable though careless looking rider, the greater part of his life, from childhood upward, having been spent on horseback.

The spur is as primitive as the stirrup, and exactly resembles in principle the prick-spurs of the ancient knights.

Of the Araucanians he says:—

Their saddles are made very much after the fashion employed by the Patagonians, being little more than rude wooden frames. A few skins are laid on the back of the horse, the saddle is placed on them, a saddle cloth of thick brown leather is thrown over it, and the whole apparatus is complete. The bridle is made, like that of the Patagonians, of twisted hide, or sometimes of a number of strips of horse-skin plaited together, a few threads of silver being mingled with them. The bit is generally the ordinary Spanish bit, with its cruelly powerful arrangement of curb and ring.²

Somewhat vague but parallel accounts are found in Dobrizhoffer's Abipones, vol. 1, 235.

This data, fragmentary though it is, shows clearly that the same structural concept for saddles is found in South as in North America. The methods of attaching the stirrups is also the same, but in many parts of South America a small stirrup is used for the great toe. Yet certain remarks by Wood and Dobrizhoffer (vol. 1, 275) indicate that this was by no means

¹ Wood, Rev. J. G., Uncivilized Races of Men in all Countries of the World, Hartford, 1876, 1173.

¹ Wood, *ibid*, vol. 2, 1196. Bits of this type are still in use in Central America and parts of Mexico.

universal. Of accessories we may note the Mexican cinch, the lasso, the primitive form of bridle and the ornamental collar.

We have previously discussed the method of mounting but some further data have come to hand. Col. Dodge says:—

Civilized people mount on the left side of the horse, because the knights of old, from whom we get our ideas of horsemanship, wore their swords on that side, and could not, therefore, mount on the right without inconvenience from that weapon.

The Indian mounts always on the right side, and this is undoubtedly natural and most convenient, as it leaves the left hand free to hold the reins and manage the horse, while the right grasps the mane or pommel of the saddle.¹

It is stated that the Roman cavalry under Vespasian changed the sword from the right to the left side and also the method of mounting. So far as we can learn this was the custom from that time to the present among European nations. The Spanish cavaliers were no exception to the rule. Hence, the Indian did not learn the mount from the Spaniard. It is fairly clear that if men are left to their own devices they will mount from the right side, unless left-handed.² According to Dobrizhoffer the natives of South America mount from the right side (vol. 2, 113). Thus it is clear that the horse culture complex of the two continents is practically identical and is therefore best explained as having a common origin in Spanish colonies. The Indian therefore contributed next to nothing to this complex.

If we turn to the Old World we get the suggestion that outside of English influence, there was a uniform type of horse gear and that this has changed very little in historic times. Bits from the bronze age show the same fundamental types in use today and the wide distribution of the side-bar frame saddle suggests its antiquity. It is said that saddles were not used in Egypt and Greece and not by the early Romans. The frame saddle appears among the Romans about the fourth century A.D. Stirrups appeared late in Europe. The Romans adopted them about 100 A.D., but their invention is attributed to the Franks. Before the era of the frame saddle a padded cloth was used, no doubt similar to our Indian pad saddles.³

There is one factor in North America that may have modified horse culture, viz., dog traction. Unfortunately, no studies of dog culture have

Dodge, ibid, 338-339.

² In a theoretical discussion of material culture (American Anthropologist, N. S. vol. 16, 494) the writer cited this mounting custom of the Indians as a possible effect of racial motor differences. At that time it was assumed that the difference between Indians and Americans was due to historical causes. The data now before us are consistent with that assumption, except that it is the American-European method of mounting that has a distinctly historical origin.

⁸ Dobrizhoffer noted a similar type in South America, An Account of the Abipones, an Equestrian People of Paraguay, 3 vols., London, 1822, vol. 1, 275.

been made in the Plains area except G. L. Wilson's unpublished work among the Mandan-Hidatsa. This investigator's parallel study of horse culture shows very little direct transfer of one to the other in the care, rearing, and training of dogs. Castration seems to have been practised on dogs in prehistoric times and in this instance to have been transferred to horses with little or no change. On the other hand, the ritualistic procedures to train and properly rear horses seem to have little in common with the rituals for dogs. When we turn to the use of the horse and the appliances for the same, we note the example of the travois and methods of packing. According to Hendry the Assiniboine in 1754 used their horses like dogs for transporting baggage but did not ride. Probably this was the first step among all tribes. We have previously discussed the historic importance of the substitution of the horse for the dog and how he passed directly into the burden-bearing complex already developed. It is probable that as there was no riding complex in dog culture, there was no resistance to taking over the whole Spanish complex.

CHRONOLOGY.

It would be interesting to follow up the chronology of the introduction of saddles to see how closely it correlates with the diffusion of the horse, but our data are likely to be too meager. The earliest data we have for the extreme north is the journal of Hendry 1754-55. In one place he says of the Blackfoot:—

Their horses are turned out to grass, their legs being fettered: and when wanted, are fastened to lines cut of Buffalo skin, that stretches along & is fastened to stakes drove in the ground. They have hair halters, Buffalo skin pads & stirrups of the same. The horses are fine tractible animals, about 14 hands high; lively and clean made. The Natives are good Horsemen, & kill the Buffalo on them.²

We have previously noted the evidence for the first appearance of the pad saddle in the north (vol. 5, 93). This may have been but a preference on the part of these northern tribes, for since they had the stirrup, halters, and ropes there is no apparent reason why they could not have used frame saddles also. On the other hand, the structure of the frame saddle is more complicated and demands considerable skill in working wood, an art not conspicuous in the Plains, hence, it may well be that the pad saddle was carried along with the horse while the frame saddle came northward at a slower rate.

¹ Proceedings and Transactions of the Royal Society of Canada, 1, 351.

² Hendry, Anthony, ibid, 1, 338.

If we take a world wide view of our subject we are impressed with the uniformity of the frame saddle in Asia, Europe, and America. The only distinct variant is the English type. The history of the former is not clear but everything indicates a single origin. While we have a date for its appearance in Rome, its eastern distribution suggests that it was not invented there. The same may be said of the Franks as inventors of the stirrup. It seems far more probable that the earlier horse-using tribes of western Asia, who first appear on the scene with a distinct horse culture in contrast to ox culture contributed these now universal appliances.

We may then summarize this study as making clear that each appliance for riding and driving horses used by the American Indians was of one distinct structural pattern, which can be traced to the Old World. Since at the time of colonization the English had a different kind of saddle from that prevailing on the continent, we find in America two geographical types, which persist to the present. As the continental type appeared among the Indians in an unfamiliar setting, it was naturally considered as of Indian origin. By analyzing the structure of the Indian made appliances we have shown how accurately the respective structural concepts were This was shown clearly when we tabulated the measurements for Thus, while the widths of frame saddles are to a large extent determined by the size of the horse, the length is far less so limited. Yet, our Shoshone saddles of the same precise pattern range from 50 to 52 cm.; Ute, 43 to 45 cm.; Menomini, 40 to 42 cm., Chevenne, 41 to 49 cm.; Crow, 48 to 50 cm., etc. It is barely conceivable that these dimensions should be so uniform within a tribé without some chosen standard of While there are here some tribal differences, it should be noted that the extreme variation recorded above is but 12 cm. When we consider that this uniformity throughout the Plains area was secured without the aid of a graduated system of linear measure, it is clear that a size type was also diffused.

SUMMARY.

We may summarize the results of this study as follows:—

1. The Indian has shown no originality. He devised no important appliances for using horses. He manufactured his own saddles, bridles, etc., but followed precisely a few definite patterns. Though these patterns appear to us as Indian, that is because the English colonists brought with them the English saddle. The Indian model is fundamentally like that of Southern Europe and Asia during the period of American colonization and

still survives among the tribes of Patagonia. In general, the complete data will show that the greater part of the horse complex of the North American Indian was borrowed first by the tribes in contact with the Spanish settlements and then diffused as far as the Plains of Canada without loss or essential modification of detail.

The one striking Indian variation is the habit of mounting on the right side of the horse instead of the left as do Americans and Europeans. The comparative data on this point make it clear that if left to their inclinations right-handed people will mount from the right. Historical data show the European method to have been first introduced into cavalry tactics by Vespasian and to have survived to this day because the sword is worn on the left side. The difference, therefore, is not due to motor differences in the Indian but, like most other culture differences, to historical factors.

- 2. The Indian did not take the cart. Yet the Spanish colonists rarely if ever used the horse, mule, or donkey for anything but riding and packing; their carts were drawn by cattle. (The great abundance of buffalo no doubt prevented the development of an Indian cattle culture.) On the other hand, the Indian of the Plains had developed dog traction by the travois long before the horse came. When he got the horse, he fitted the travois to him. In any event, it is probable that the established use and simplicity of the travois would have inhibited the use of carts. Thus, while in the travois we have an instance of the use of an Indian invention with the horse, the presence of the horse had nothing to do with its origin.
- 3. The rapidity and completeness of horse culture diffusion in America is a good illustration of how fully traits of borrowed culture may be assimilated. In this instance we have sufficient data to determine the general lines of diffusion but such is not often the case. For example, maize culture was once diffused over a large part of North and South America, for the wild plant is found only in one area which must have been the place of origin. In the Old World the spread of horse culture was most likely strictly analogous to its diffusion in America. Returning to our problem, it will be seen how if a non-historical people had brought Old World horse culture to America, we should be puzzled at the similarities observed between these traits on the two hemispheres, but would probably set it down as another case of assumed independent invention. This investigation shows that the invoking of independent invention, to be more than a plea of ignorance, must rest upon specific data.

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UNIV. OF MICH

ANTHROPOLOGICAL PAPERS

OF

THE AMERICAN MUSEUM OF NATURAL HISTORY

VOL. XVII, PART II

COSTUMES OF THE PLAINS INDIANS

B

CLARK WISSLER

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American Museum of Natural History.

PUBLICATIONS IN ANTHROPOLOGY.

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(Continued on 3d p. of cover.)

COSTUMES OF THE PLAINS INDIANS.

By CLARK WISSLER.

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PREFACE.

The following study has as its chief object not so much the mere descriptions of certain types of garments among the Indians of the Plains as the presentation of a typical trait in material culture and the development of the problems involved. In a former paper on the Material Culture of the Blackfoot Indians some attention was given to the forms and distributions of men's shirts and women's dresses in order to determine the place of Blackfoot culture in the Plains group. This paper presents some of the results obtained by a far more intensive study of specimens from the Plains area as a whole. The specimens described are from the Museum's collections, particularly from the collection presented by J. P. Morgan in 1910; but the writer is under obligation to Dr. Walter Hough of the United States National Museum, A. C. Parker of the New York State Museum, C. C. Willoughby of the Peabody Museum at Cambridge, and to Dr. Fay Cooper Cole of the Field Museum of Natural History for equally important data from their respective institutions.

The structural analysis of the specimens was largely the work of my assistant, Mr. S. Ichikawa, who is to that extent a joint contributor. The drawings should also be credited to him.

August, 1915.

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INTRODUCTION.

The anthropological literature of some years ago gave considerable attention to problems in the development of industrial processes. The genetic relation of inventions as traits of culture were sought in a more or less world wide objective comparison. The order of the meth was to retrace by logical analysis the steps by which a given technical process was developed. Thus, such arts as fire-making, stone chipping, pottery, etc., were intensively studied and their more complex forms analyzed to seek for the elemental or beginning processes, with the idea of ultimetaly recorstructing the evolution, or history, of each. Some years ago such studies. were energetically pursued and consequently occupy a large place in the literature of that time. They finally came into some disrepute because of their extreme dependence upon the logical relations observed to the disregard of facts of geographical distribution and culture history. As soon as it appeared that the logical sequence as determined by the analysis of the process in question was not consistent with the geographical and other facts, confidence was lost in the method and a reaction set in toward the other extreme. The result is that for some years anthropologists have ignored the whole problem of the genetic or historical development of man's material culture. The problem is, of course, none the less real for that.

The following investigation was undertaken in the anthropological laboratory of the Museum with the view of raising anew the question as to the validity of the method of logical analysis. The subject chosen was the dress of the North American Indians of the Plains and adjacent territories. The method was to study intensively the types of dress and their structural processes in the Plains area and then to extend the study less intensively to the continent and to the world at large.

We shall base our discussion almost wholly upon two types of garment, the man's shirt and the woman's dress. The sharp contrast that now exists between the costumes of European men and women is not observable among primitive peoples, the rule is for the sexes to use the same fundamental pattern. Thus, if the men wear trousers, the women do also, although the cut may be different. It is chiefly owing to this that we can make effective use of the dress of both sexes among the Plains Indians. In passing, one may remind the reader that this difference in the degree of contrast between the costumes of men and women is not a distinguishing characteristic between primitive and civilized peoples for like most phenomena of cultures the European divergence in patterns has a definite historical explanation.

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Fig. 1 (1-2721). A Nez Percé Shirt. Collected about 1865. The pattern is shown in Fig. 7a.



Fig. 2 (50.1-301). A Dakota Shirt. For pattern see Fig. 7b.

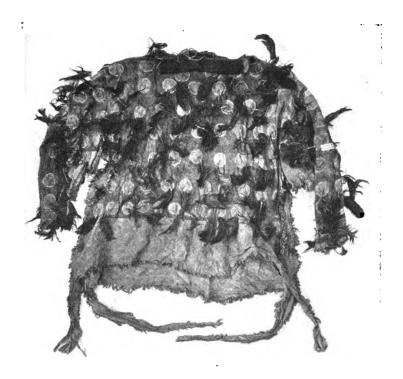


Fig. 3 (50-4277). A Gros Ventre Shirt. This is part of the regalia for the dog dance, see this series, vol. 1, 255. For pattern see Fig. 8g.

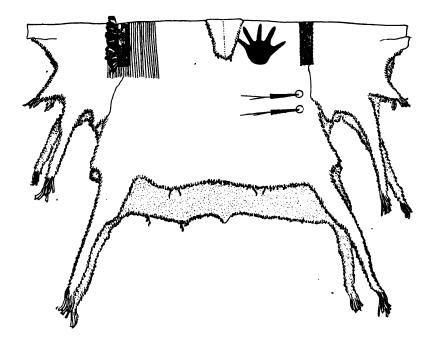


Fig. 4 (50-841). A Man's Shirt of the Poncho Type. This specimen is made of two-deerskins. There are bands of quiliwork over each shoulder, fringed on one side with crow feathers. On the opposite side of the fold is a transverse band of quiliwork. See Bulletin of this Museum, vol. 18, fig. 95. The tail tuft is discernible on the lower edge and the dewclaws are still attached to the leg projections. Collected in 1838.

Men's Garments.

If one take a typical man's shirt of the Plains area and suspend it, the sleeve and shoulder line will be found horizontal and to coincide. In other words there is a neck hole, but no collar (Fig. 4). If on the other hand, one suspend a true coat (Fig. 11), the familiar European sleeve and shoulder cut is seen. This may be generalized by classing the former as of the poncho type and the latter as of the coat type.

First, we may note the structure of the poncho type. Fig. 4 represents a specimen collected about 1838. There is another old specimen in the Nez Percé collection (Fig. 1). A more modern specimen is shown in Fig. 2. A simpler but old and interesting specimen is Fig. 3. From these sketches the general pattern concept is clear. Two whole skins of mountain sheep or other ruminants are taken and cut as in Fig. 5. Thus, the peculiar contour of sleeve extensions, or capes, is explained as also that of the skirt (Fig. 6). The whole pattern of this type of shirt is seen to be correlated with the contour of the natural material, and it seems most probable that it was this form of the material that suggested the pattern.

The former distribution of this type of shirt cannot be precisely stated, but so far we have found it to prevail among the Dakota, Nez Percé, Gros Ventre, Blackfoot, Crow, Hidatsa-Mandan, Pawnee, Assiniboin, Arapaho, Ute, Comanche, Kiowa, and Cheyenne. It occurs, but less universally among the Sarsi, Plains-Cree, and Ojibway on the north and on the south among the Apache and in the pueblo of Taos.

Our museum collection contains about forty shirts of this poncho type, all of which we have examined in detail. Among them we find many minor variations in pattern, but so far as we can see these are all adjustments to the coat type and to new materials and, hence, due to white contact. The tendency to use cow skins and cloth is very strong and in these materials the natural contour, the base of the pattern, is wanting. This is particu-

^{1 &}quot;A jacket, made like a shirt, of beaver or otter skins, and ornamented with beads, was highly coveted, and was beyond the command of any but the privileged few. The finest article of Indian apparel I ever saw was one of these jackets made from four otter skins. The body was formed of two pelts, and each arm of one. The skin of the head, tail, feet and even the claws of all the animals were preserved intact in the garment, and the whole richly trimmed with beads. Similar garments were also made of fine cloth, fringed with swan's down, and heavily beaded." — Dunbar, The Pawnee Indians, Magazine of American History, IV. 280.

According to James R. Murie these shirts were so rare that they should be ignored, the fact being that Pawnee men did not wear upper garments of any kind, simply a robe.

larly noticeable in the cut of the bottom as shown in Figs. 7-9. In most cases this curve is simplified by dropping the tail projection in the center, observable in the older type, Fig. 7b, but in one Arapaho piece we find an interesting rectangular cut at the corresponding point, Fig. 7e.

A comparison of the tops of these sketches shows that the shoulder

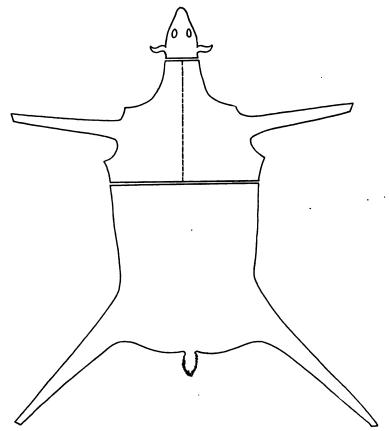


Fig. 5. Diagram showing how a Skin is cut and folded to make a Shirt of the Poncho-Type.

extensions tend to become true sleeves and the sides of the shirt are often entirely or partially sewn up in which case a vertical cut is made on the breast at the neck without which it would be next to impossible to get into the garment. The older ponchos have neither fronts nor backs, both sides being alike, but many of the modern variants have a distinct front. It is

chiefly these variations in association with slight inessential modifications calling to mind features of European shirts that suggest that we have in Fig. 7a and 7b the original type of poncho for men in the Plains area.

This is further reinforced by a study of sleeve forms which in the older skin specimens follow the patterns of Figs. 7a and 7c. The sleeve pattern of Fig. 8i is found most often in cloth and distinctly modern skin pieces.

So far we have concerned ourselves with the pattern alone, but the most characteristic features of these ponchos are decorative. In all specimens of the older type these take approximately the same forms. The most conspicuous of these features are the broad beaded or quilled bands. These

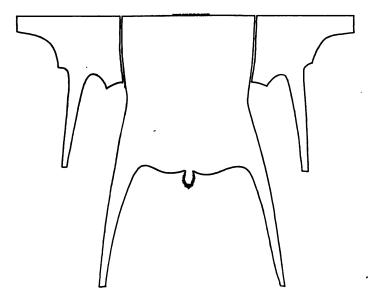


Fig. 6. Diagram showing the Arrangement of Pieces cut from the Preceding.

are made on separate strips of skin and readily detached from the shirt. From each side of the neck a band runs along the shoulder seam almost to the ends of the sleeves. At right angles to this so as to fall over the shoulders like suspenders are two other bands, one for each side. At the neck, both front and back, are triangular flaps also bearing beaded and quilled decorations. The edges of these bands are often strung with rows of feathers, strips of white weasel skins or human hair. It is due to the latter that these ponchos are often called "scalp-shirts." In the older types particularly, the edges of the body and sleeves were notched and fringed. These characteristics were almost universal but there are in addition, tribal

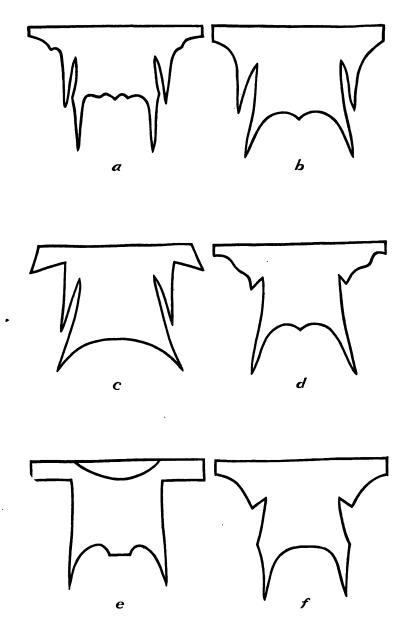


Fig. 7 (1–2721, 50.1–301, 50.1–1186, 1–2712, 50.1–37, 50.1–653). Shirt Patterns for Men: a Nez Percé; b Dakota; c Dakota; d Nez Percé; c Arapaho; f Crow.

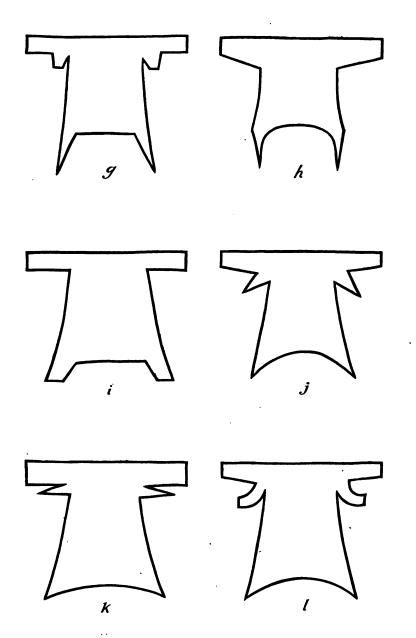


Fig. 8 (50–4277, 50–7863, 50.1–304, 50.1–761, 50.1–7370, 50.1–7212). Shirt Patterns, continued: g Gros Ventre; h Dakota; i Dakota; j Arapaho; k Ojibway; l Cheyenne?.

and regional decorations. Thus, many Blackfoot ponchos bear large circular designs on the breast and back. According to Maximilian, this was formerly common among the Assiniboin and a few other northern tribes. Dakota ponchos in particular, are frequently painted in two ground colors, bearing heraldic devices. The beaded or quilled bands have tribal peculiarities also. In another paper of this series we shall consider the probable origins of these various decorations.

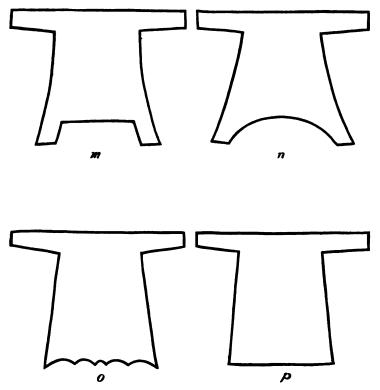


Fig. 9 (50.1-1303, 50.1-1301, 50.1-6321, 50.1-926). Shirt Patterns, concluded: m Apache; n Cheyenne; o Kiowa; p Pawnee.

Returning to the coat-like features of the more modern forms of poncho, we may be reminded that the coat form is not necessarily of European origin. The Eskimo and most Déné tribes cut a coat-like garment that fits the neck and shoulders and has sleeves, but the best known and most distinctly coat-like form is that of the Naskapi, Fig. 10. Here the pattern is most clearly cut to fit the human form as in European tailoring. With

slight variations this pattern extends through the Cree to the Rocky Mountains and thence to the Salish of British Columbia. It even dips into the Plains as shown in the old Gros Ventre specimen (Fig. 12).

The garments of the western Déné area are not very well known, but in Alaska some of the modern natives wear a coat with flaring skirts like the Naskapi and certain Siberian styles. It is therefore probable that the Naskapi form is aboriginal and not due to European influence. Thus, in certain Iroquois skin coats we find a clear attempt to cut a close-fitting garment, suggesting the styles of colonial days (Fig. 13). Some other skin coats in the collection are cut in a simpler pattern, but still show the same intent. If we compare these with the Naskapi pattern the difference is clear, for here a large piece of skin is taken for the back and two for the front. The flaring effect is produced by one or more triangular inserts. In many Iroquois coats there is a cut down the median plain of the back, a feature noted in the coats of many eastern Algonkin tribes and some of the Déné. On the other hand, the Naskapi mode of side seams is noted among the Sarsi, Ojibway, Menomini, Winnebago, and Penobscot. It seems therefore that the poncho form and the Naskapi coat form have their parallels among other tribes, but that in contrast to these we have a decidedly European-like cut of coat extending from the Iroquois through Canada to the Salish.

¹ The Naskapi winter coat is usually sewed up in front. We find that a whole skin is taken for the back piece, the tail at the bottom, and the sides trimmed to give a waist and the flaring skirt. The neck piece forms the pendant collar and the sides are pierced to give the shoulder lines. The front of the coat is of a whole skin like the back, but cut down through the middle. In the coats with sewed up fronts this is curious, because the maker cuts the skin in halves and then sews it up again.

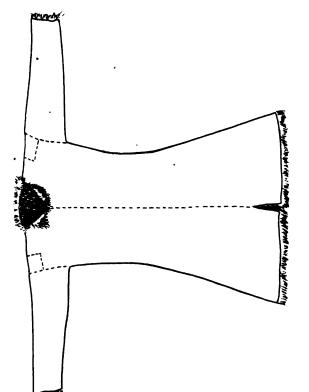


Fig. 10 (50-1721). Pattern of a Naskapi Coat.

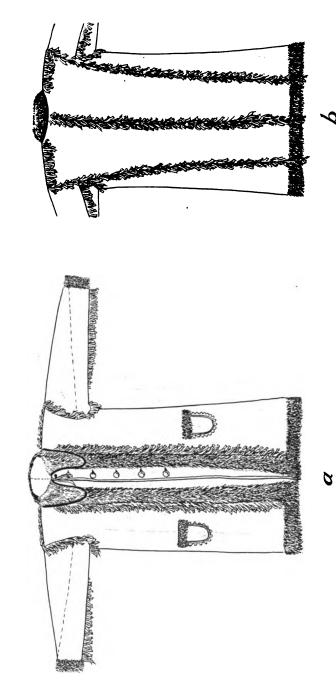


Fig. 11 (16-4576). Man's Coat of Decrakin, Thompson. In this specimen we have clearly the tailoring lines of the Buropean Coat.



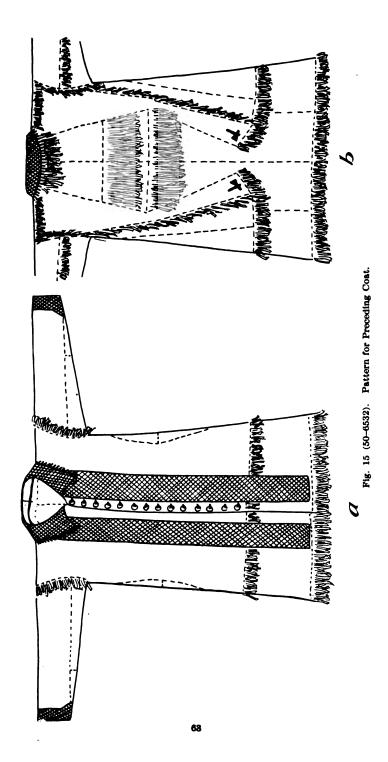
Fig. 12 (50–1924). Man's Coat, Gros Ventre. An old specimen made of dressed buffalo skin. The pattern is simple, the body being a single piece of skin. In addition to the attached collar the coat is composed of but three pieces.



Fig. 13 (50.1-1775). Man's Coat of Deerskin, Onondaga.



Fig. 14 (50-6532). Man's Coat of Deerskin, Cayuga, collected by M. R. Harrington, 1907. This is a unique example of tailoring skill, for a boy's coat was split down the back, pleces inserted, and a skirt added. The beaded tomahawks were formerly the tail ornaments of the small coat. Notwithstanding its composite pattern, the lines of the body have been closely followed. Worn by William Henry Fishcarrier, a Cayuga chief. Photographed with coat, Plate LXIV, Twenty-first Annual Report, Bureau of American Ethnology.



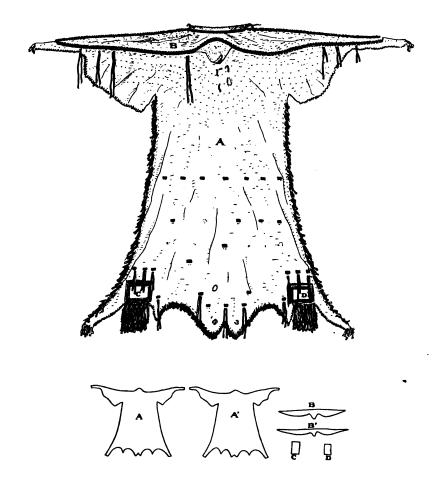


Fig. 16 (50.1-654). A Woman's Dress, Crow. An entire elkskin is taken for each side. A cape-like yoke is formed of two pieces as above, and sewed in place. The tail projection on b hangs loosely over a corresponding one on a.

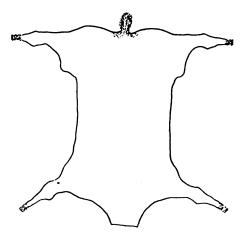


Fig. 17. Contour of an Elkskin. In tanning, the hair is left on the tail and the feet. Two of these skins are required to make a dress. See Figs. 16 and 18.

Women's Garments.

The costume for women is in its fundamental technique similar to that for men. Taking a Crow specimen as the type (Fig. 16) we see that three pieces of skin are used: an inserted yoke and two large pieces for the skirt. The sides are sewed up from the bottom of the skirt almost to the cape-like extension at the shoulders. There are no sleeves, but the cape-like shoulder piece falls down loosely over the arms. The side seams and the bottom and all outer edges are fringed. The garment has neither front nor back, both sides being the same.

The technical concept is again a garment made from two whole skins, in this case, elkskins. A dress is formed by placing two whole skins face to face, the tail ends at the top, the head at the bottom. The neck is fitted and the yoke formed by the insertion of a transverse piece of skin. Very little trimming is needed to shape the sides of the skirt.

The distribution of this pattern concept so far as we were able to determine by the study of specimens is: Arapaho, Assiniboin, Apache, Blackfoot, Crow, Cheyenne, Comanche, Dakota, Gros Ventre, Hidatsa, Kiowa, Nez Percé, Northern Shoshoni, Plains-Cree, Sarsi, Ute, Yakima.

We come now to the consideration of variations in the pattern. While the fundamental form holds throughout the above distribution, there are a number of distinct cuts for the contour of the yoke and the bottom of the skirt. Yet, there is very little variation within the tribe, it is truly surprising how precisely each of the tribes we have studied followed a definite form for the bottoms of their dresses, making it clear that they had a fixed mode, or style for the cut. This will be more fully discussed in another connection.

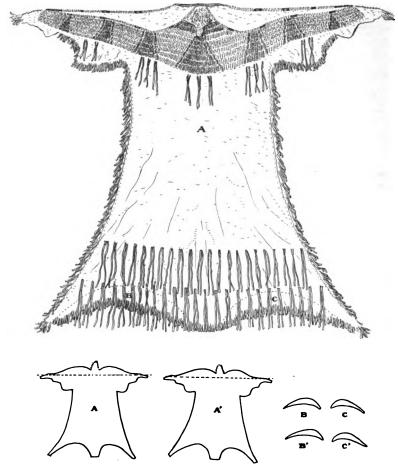


Fig. 18 (50.1-1965). A Woman's Dress, Yakima. The pattern differs from the preceding in that there is no insert at the top, merely a folding over as indicated. Separate curved pieces are inserted at the bottom to give the required contour.

European trade brought within the reach of these tribes the finest of cloth. A special quality known as strouding was always popular and from the very first was substituted for skins in making garments. This new material had a shape of its own and consequently presented a new problem to the Plains dressmaker. One example is shown in Fig. 21. A more common way was to take a rectangular piece of cloth, cut a neck hole in the

middle, join the sides by triangular inserts and add shoulder extensions. In many cases the bottom of the skirt is cut out to conform to the old style. Thus it is clear that the original two skin concept was able to prevail over the introduction of new materials.

When we turn to ornamentation we find these dresses quite decorative. In contrast to men's ponchos, we find the tail of the elk falling in the center of the breast, but like them in the tendency toward horizontal decorations with quills and beads. While there is considerable tribal variation in decoration, the general tendency is to bead or quill more or less completely the entire yoke. The edges of the yoke and the skirt are usually fringed and sometimes the latter faced with a narrow band of beads. Upon the body of the skirt will be found a varying number of pendant thongs. Among the Blackfoot symbolic devices of red cloth are often found near the bottom of the skirt and similar attachments are noted on some Sarsi, Crow, and Assiniboin dresses.

HISTORICAL RELATIONS.

One general problem arising from this study is the historical relations between the several varieties of costume which in turn naturally leads to that other question as to whether structural similarities can be taken as evidence for genetic relationship. The subject may be best presented by reviewing the literature now available.

West of the Plains Area we have a large extent of territory in which no upper garment of this kind appears. The men tend toward nudity while the women wear a short skirt. The upper garment usually takes the form of a cape or is simply a robe. This is the case in California and some parts of the Shoshonean area but on the whole the Shoshonean tribes incline toward the types we have described. In the Columbia River region and northward, particularly among the Salish, we again find the poncho types of the Plains. The data furnished by Teit for the Thompson, Shuswap, and Lillooet are sufficiently detailed to permit of an analytic comparison. In the first place we find the poncho shirt for men. The most distinctively poncho in type is a Thompson specimen, (16–1057, Teit, Fig. 162), made from a single piece of buffalo skin. There are no sleeves and the bottom is cut square; the sides are laced somewhat as in Plains shirts, but the neck is different. There is a circular neck hole with a vertical slit on the breast and a collar is set on the edges of the hole. This we are assured was the



¹ The Thompson Indians of British Columbia (Memoirs, American Museum of Natural History, vol. 2, part 4, New York, 1900).

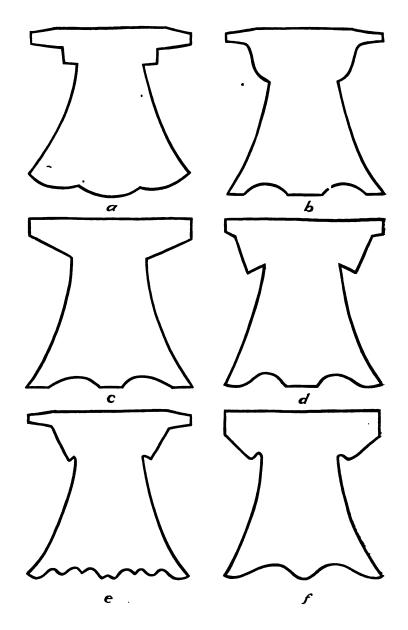


Fig. 19. Dress Patterns: a Yakima; b Nez Percé; c Blackfoot; d Sarsi; e Crow; f Assiniboin.

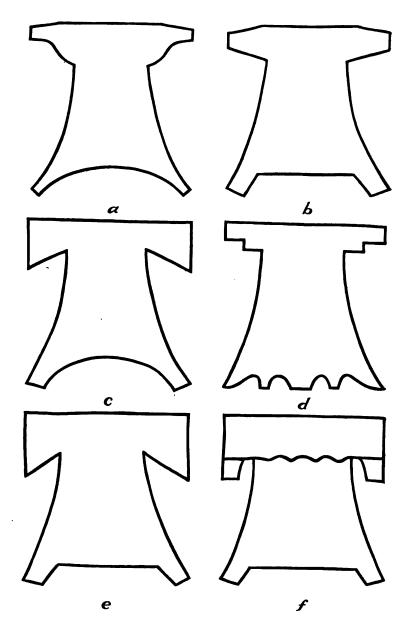


Fig. 20. Dress Patterns, continued: a Dakota (an alternate pattern is shown in Fig. 27); b Cheyenne; c Shoshoni; d Ute; e Arapaho; f Kiowa.

style for the buffalo skin shirts. On the other hand, there were buckskin shirts made of a single piece but with short sleeves (Fig. 163, Teit). In these again we have a circular neck hole but no collar. There is yet another type of man's upper garment, a true coat, previously noted. The cut of the neck is again as in the ponchos. Thus, the one distinctive feature in Thompson ponchos and coats is the cut of the neck, it being to all intents a coat cut and even in ponchos often fitted with a collar.

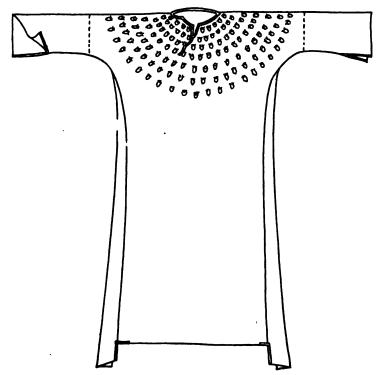


Fig. 21 (50.1-314). Dress of Blue Strouding, Brulé. Most cloth dresses in the Plains are similar in pattern. The front and back may be one piece with a hole cut for the head. The sides may be trimmed, but usually they are not. Angular pieces are inserted at the sides.

One other man's garment should be noted. The entire skin of a wolf or other animal was often worn over a poncho or coat, not so much as an extra protection as for ceremonial purposes.

The women of the Thompson wore a shirt-like dress with sleeves cut very much like the man's coat. It was open on the shoulders and laced there. The bottoms were square cut. As an under garment they wore a shirt of woven materials or a buckskin bodice.

This introduces us to another feature of Thompson clothing, the weaving of bark and hair. Garments of this material were confined to skirts and capes. Where, as among the Lillooet and Lower Thompson, they were in general use (Teit, 219), skin ponchos and coats were rare. As the weaving of bark and hair is widely distributed in this area and is practically universal among the Salish, it seems most likely that the skin poncho and the coat are due to influence from the east. We failed to find close structural parallels, however, between the Plains type and these skin garments, they being more like the coat type of the north. Yet Teit states that,

The shirts worn by the men reached halfway to the knees, and were generally made of two doe or buck skins sewed together (necks down). The sleeves were wide, and the neck was furnished with a lacing. The hind legs of the skin formed the sleeves; and along the entire length of the back of each was a fringe of cut skin, this being the only ornament.

This is essentially the structural concept of the Plains. Again, the same writer says of the Shuswap:—

Some women's shirts had wide sleeves and two flaps turned down from the neck which reached to the middle of the chest and back respectively. These flaps were cut in various shapes but most commonly they were square. They were fringed along the bottom, and ornamented with quills, beads, and shells.²

Here also we have what reads like the accounts of the Plains-Cree.³ It also reminds one of the dress now found among the Apache in the south. All this makes it clear that the structural concept of the Plains must have been in at least partial use among the Salish, along with the coat concept. We see, however, that underlying these forms were the much more common garments of woven materials following patterns of their own.

Turning now to the east, we find another important variant among the Plains-Cree and some of the Ojibway, our data taking us back to the period of first exploration.

For the Cree we may quote from Mackenzie: -

The coat, or body covering, falls down to the middle of the leg, and is fastened over the shoulders with cords, a flap or cape turning down about eight inches, both before and behind, and agreeably ornamented with quill-work and fringe; the bottom is also fringed, and fancifully painted as high as the knee. As it is very loose, it is enclosed round the waist with a stiff belt, decorated with tassels, and fastened behind.

¹ Teit, ibid., 206.

² Teit, The Shushwap Indians (Memoirs, American Museum of Natural History, vol. 2, part 4, New York, 1909), 502.

³ Harmon, D. W., A Journal of Voyages and Travels in the Interior of North America. New York, 1904, 275.

The arms are covered to the wrist, with detached sleeves, which are sewed as far as the bend of the arm; from thence they are drawn up to the neck, and the corners of them fall down behind, as low as the waist.¹

Harmon² gives a somewhat fuller statement, but one that is curiously like that of Mackenzie:—

The shirt or coat, which is so long as to reach the middle of the leg, is tied at the neck, is fringed around the bottom, and fancifully painted, as high as the knee. Being very loose, it is girded around the waist with a stiff belt, ornamented with tassels, and fastened behind. The arms are covered as low as the wrists with sleeves, which are not connected with the body garment. These sleeves are sewed up, as far as the bend of the arm, having the seam the under side; and extend to the shoulders, becoming broader toward the upper end, so that the corners hang down as low as the waist. They are connected together, and kept on, by a cord, extending from one to the other, across the shoulders.

Again we have the statement of Henry: -

The shift or body-garment reaches down to the calf, where it is generally fringed and trimmed with quill-work; the upper part is fastened over the shoulders by strips of leather; a flap or cape hangs down about a foot before and behind, and is ornamented with quill-work and fringe. This covering is quite loose, but tied around the waist with a belt of stiff parchment, fastened on the side, where also some ornaments are suspended. The sleeves are detached from the body-garment; from the wrist to the elbow they are sewed, but thence to the shoulder they are open underneath and drawn up to the neck, where they are fastened across the breast and back.

— Journal of Henry and Thompson, 514.

Grinnell 3 says of the Blackfoot: -

The ancient dress of the women was a shirt of cowskin, with long sleeves tied at the wrist, a skirt reaching half-way from knees to ankles, and leggings tied above the knees, with sometimes a supporting string running from the belt to the leggings. In more modern times, this was modified, and a woman's dress consisted of a gown or smock, reaching from the neck to below the knees. There were no sleeves, the armholes being provided with top coverings, a sort of cape or flap, which reached to the elbows. Leggings were of course still worn. They reached to the knee, and were generally made, as was the gown, of the tanned skins of elk, deer, sheep, or antelope. (196).

In early times the Assiniboin women are said to have dressed like the Cree (vol. 5, 137).

¹ Mackenzie, Alexander, Voyages from Montreal, on the River St. Lawrence, through the Continent of North America, to the Frozen and Pacific Oceans, in the years 1789 and 1793, etc., London, 1801, XCIV.

² Harmon, ibid., 275.

Blackfoot Lodge Tales, New York, 1903.



Fig. 22 (50.1-7369). A Cloth Dress, Plains-Ojibway, Cowesses Reserve, Saskatchewan. The front and back are the same, the garment hanging from the shoulders by the decorated straps. In this case a modern calico sleeved waist was worn as an upper garment.



Fig. 23. A Cree Dress in the Field Museum of Natural History. The material is decreakin throughout. The skin is folded over at the top and on the shoulders there are laces. Collected in Manitoba.

For the Eastern Dakota we have the early account of Carver 1 which is not so explicit but is supplemented by a drawing: —

Such as dress after their ancient manner, make a kind of shift with leather, which covers the body but not the arms. (229).

In the illustration the women's upper garment appears to be joined over the shoulders, possibly by straps.

It is clear that all these observers are reporting upon the same general type of costume which possesses new features as the detached cape-like sleeves, the shoulder straps, and the turned down flaps. A specimen of this type from the Ojibway, though somewhat modernized, will be found in Miss Densmore's volume on Chippewa Music (II, 223). Here we find the separate sleeves and a skirt held up at the shoulders by straps. It is also stated that formerly a blanket was taken for the skirt and the surplus length folded down at the breast upon which decorations were placed.² This tallies very well with the remarks of Harmon and Henry and is thus readily identified.

In 1913 Mr. Skinner observed a Plains-Ojibway (Manitoba) woman wearing a cloth skirt of this form, Fig. 22. The shoulder straps and the intervening flap are decorated. Instead of the detached sleeves, she wore a simple calico waist cut like a modern shirt. It was ascertained, however, that formerly detached sleeves were worn with these skirts. There is a similar cloth skirt in the Museum's Penobscot collection but without the shoulder bands or the ornamental flaps. Again at Lake St. Joseph, Mr. Skinner collected a complete skin costume in this style, (Figs. 24-25). Here we see the turned down flap in front and behind.

Dr. Hough informs us that in the Turner collection at the United States National Museum there is a doll from the Nenenot dressed in this type of costume. The Field Museum of Natural History has a dress from the Plains-Cree which is also of this type, (Fig. 23). In this we see the detached sleeves extending over the shoulders to the neck. The dress is open across the entire top and laced at the sides. The turned down flap noted by early observers is here also.

It is well to note the structural peculiarity of this type, for instead of the coat-like shirt of some Salish we have an upper garment reduced to a pair of large sleeves extending over the shoulders to the neck and held together only by a string, while the skirt is almost full length and held above the breasts by shoulder straps, instead of being hung to the waist.

¹ Carver, John, Travels through the Interior Portions of North America in the years 1766, '67, and '68, London, 1781.

² Also Plate 17 in Schoolcraft, part 5.

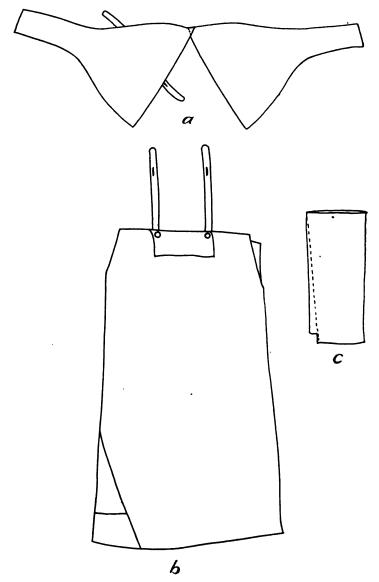


Fig. 24 (a, 50-8000; b, 50-7999, c, 50-8001). A Dress of Deerskin, Saulteaux, from Lake St. Joseph, Ontario. a, the sleeves as seen from the back; b, the skirt; c, the leggings.

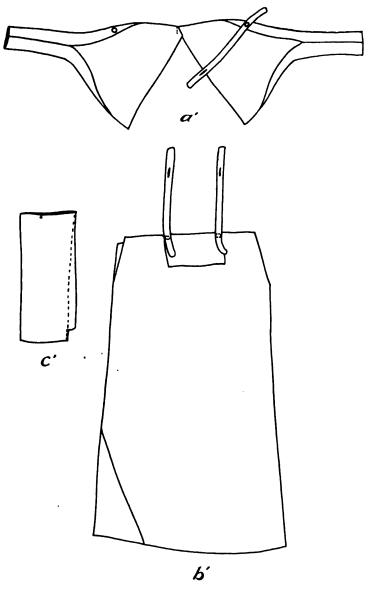


Fig. 25. Reverse of the Preceding Garment.

Mr. Willoughby has described two old specimens credited to the Plains-Cree.¹ In these specimens we find a dress made of two rectangular pieces of skin, one piece forming the skirt and the other the waist. The former

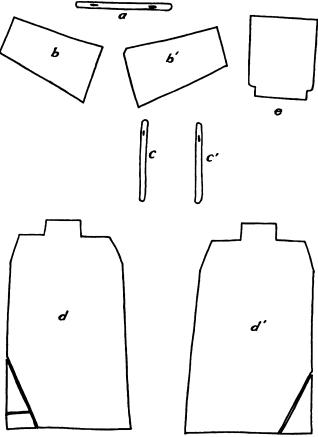


Fig. 26. Patterns for Parts of the Dress shown in Figs. 24–25. a, throat strap for holding sleeves in place; b, b' shape of piece forming sleeves; c, c' shoulder straps; d, d' pieces to form the skirt; e, piece for legging.

has the seam at the side and is thus very much like an Algonkin slit skirt. The waist is peculiar in that it is double. He says:—

The piece forming the upper portion of the garment is folded horizontally through the center, then perpendicularly in the middle. A slit is cut through the upper half of the second fold for one arm. The upper folded edges are joined over

American Anthropologist, vol. 7, 1905, p. 640.

the shoulders with a short strap and thongs, but the side for the other arm is left open.¹

Somewhat like this was the method of wearing robes among many of the Algonkins, viz., to fasten their edges over one shoulder and leave the other arm free.² It seems, therefore, quite probable that in this curious folded waist to the dress we have a modified form of the robe or blanket. The probability of this is increased by the data as to sleeves. Willoughby has made very clear the general use of one or two detached muff-like sleeves among the Algonkin of the east and since the preceding quotations leave no doubt as to the use of such sleeves by the Cree at the time when these dresses were worn, one may suspect that their association has a historical basis.

Thus this extension of our quest for types has taken us into the eastern region of the skirt-like garment. It appears that everywhere in the United States east of the Mississippi, except among some Siouan and Central Algonkin tribes the women wore a skirt fastened at the waist. One form of this is often spoken of as the Algonkin slit skirt, though it was used by the Iroquois and perhaps a number of southern tribes. It even found its way into the southern Plains.

Thus Dunbar gives us a very definite statement for the Pawnee:-

The dress of the women consisted of moccasins, leggins, tightly laced above the knee, and reaching to the ankles, a skirt covering from the waist to below the knee, and a loose waist or jacket suspended from the shoulders by straps. The arms were bare, except when covered by the robe or blanket. The garments of the women, other than the moccasins, were made, if the wearer could afford it, of cloth, otherwise of some kind of skin, dressed thin and soft. — Magazine of American History, IV, p. 268.

Probably the same kind of garment was used by the Cheyenne for we read in the account of Long's Expedition that:—

Their costume is very simple, that of the female consisting of a leathern petticoat, reaching the calf of the leg, destitute of a seam, and often exposing a well-formed thigh, as the casualties of wind or position influence the artless foldings of the skirt. The leg and foot are often naked, but usually invested by gaiters and mockasins. A kind of sleeveless short gown, composed of a single piece of the same material, loosely clothes the body, hanging upon the shoulders, readily thrown off, without any sense of indelicacy, when suckling their children, or under the influence of a heated atmosphere, displaying loose and pendant mamma. A few are covered by the more costly attire of coarse red or blue cloth, ornamented with a profusion of blue and white beads: the short gown of this dress has the addition of wide sleeves



¹ American Anthropologist, vol. 7, N. S., 640

² Ibid., 504.

descending below the elbow; its body is of a square form, with a transverse slit in the upper edge for the head to pass through; around this aperture, and on the upper side of the sleeves, is a continuous stripe, the breadth of the hand, of blue and white beads, tastefully arranged in contrast with each other, and adding considerable weight as well as ornament to this part of the dress. Around the petticoat, and in a line with the knees, is an even row of oblong conic bells, made of sheet copper, each about an inch and a half in length, suspended vertically by short leathern thongs as near to each other as possible, so that when the person is in motion, they strike upon each other, and produce a tinkling sound.¹

Mr. A. C. Parker of the State Museum in Albany supplies the following information as to Iroquois costume:—

I have found that these early Indian women did wear a tunic or over dress made of two deerskins fastened into a sort of sleeveless gown. The necks of the pelts were trimmed off in most cases and holes were made in the side of the skin through which cords of buckskin were drawn to fasten it together. This was done by two methods, either through large holes into which the buckskin was run as a tape or run through smaller holes placed in pairs which were tied together in short strings that hung down in front. These garments were not always fringed at the side, although I am told that they were mostly so. There was a short poncho that was made by folding a single skin in the middle and cutting a hole for the neck. This garment was often so short that it did not reach the waist. It was never fastened by a belt, so that the skin of the body was often visible under the flapping garment. The Algonkin slit skirt was an Iroquois garment in the sense that the women once wore it. I am told that in early times this garment was made by simply folding the skin about the body and tying a broad band of buckskin at the waist. The skin was folded down over this band, securing it effectually. The older garments were not sewed at the side; the slit was generally over the left leg which permitted the limb to be bared and used as a sort of work board upon which buckskin strings were rolled between it and the hand. Hemp strings were also twisted in this way, that is to say, rolled into shape. In later times when broadcloth came into use, garments of that material were patterned after the old buckskin skirt, although usually the cloth garment was sewed up the side. In most cases, however, there was a short strip reaching part way to the knee on the right side, left either partly open or simply basted together.

As to the dress patterns, my inquiries have shown that the necks of skins formed the bottom of the dress and never the top. I was told that sometimes the men used the tails at the neck but that the women did not. The long pieces formed by the fore legs and neck were usually drawn to the side and slashed in the fringe, but most of the neck was entirely trimmed off. The reason apparently being that the leather was too thick and so easily stiffened that it was not an ornament. One of my informants, said that the fringe formed by the fore legs was regarded as an attractive part of the ornamentation, since it hung down at the side longer than the rest and lay upon

¹ Long's Expedition, 1823, vol. 3, p. 47.

² It is curious how widespread was the use of the tail as an ornament. Willoughby quotes Levett ¹2 the effect that in New England deerskin mantles were valued more if bearing a perfect tail (*Ibid.*, 504). They occur in Naskapi coats and then generally westward down through the Plains.

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the skirt below. For this reason the front of the dress sometimes presented a "U" shaped outline, that is to say, the cut was so made that it was in a semicircular shape from one side to the other.

Of the women of New England we read: -

The women's robes were longer and fuller than those of the men. Instead of one deer or bear skin two were sewed at full length. These garments were so long as to drag on the ground 'like a great ladies train.' — Willoughby, American Anthropologist, vol. 7, 505,

Before taking up the interesting points raised by these new data we may give a moment's consideration to the slit skirt. The drawings of John White, presumably of Virginia Indians in 1585 show women wearing two aprons one before and one behind, showing as they hang a slit on either side. While this is not strictly speaking a slit skirt, the sketches give one much the same appearance. The skirt is, however, a single piece of skin and most likely an entire deerskin. The conventional cloth skirts as worn by modern Indian women have one peculiarity, a trailing strip at the slit. Now, if a deerskin were taken and drawn around the body in the natural way to form such a skirt, the neck and tail pieces would come together at the side and the skin of one fore and one hind leg would hang down the side of the leg. This would give us the same effect as is obtained in the cloth skirt by the pendant strip. While this is as yet no definite proof that this is the history of the slit skirt, it must be given great probability since we find the forms of Plains garments due to similar conditions.

To return to our consideration of upper garments we find an interesting distribution for the detached sleeve. Thus, while the Iroquois women wore a poncho-like upper garment, it had no sleeves and was quite like an abbreviated Plains dress. The idea of sleeves as a separate and distinct garment thus extends over the Eastern Woodlands and into the Plains, with the possible exception of the Iroquois.

If we take the continent as a whole, we find a great sleeveless area, comprising the greater part of the Southeastern states, the Southwest, California, and the North Pacific Coast. In the north, we have the Eskimo, Déné, and Northern Algonkin areas universally using the true sleeve. Then in the intermediate territory as among the Salish, the Plains, and Eastern Woodlands, a mixed area. Among practically all of the Eastern Woodland tribes within the United States a toga-like upper garment was worn with a single sleeve for the exposed arm. This was fastened by a string so as to be readily taken off in case of need. In the Ojibway and Western Cree country the toga-like garment disappears and two sleeves are used, but still hung by a string so that the arms can be freed at will. In



pattern, these sleeves were closed only from the waist to the elbow. Now in the Plains, particularly in the north in proximity to the Cree, we find some of the sleeves for women's dresses formed by closing up the edge of the cape from elbow to wrist. We also find in the inverted yoke of the Nez Percé, etc., a piece of skin not unlike that necessary for such sleeves. In men's shirts we have also noted the same tendency toward closed sleeves and structurally the older form of sleeve (p. 52) is not unlike that used by Ojibway women. Hence, this distribution suggests that the belt of mixed sleeve types is due to opposing influences from the sleeveless and sleeved areas respectively.

This brings us to an important phase of the problem; viz., in how far can such data take us in historical interpretation? After having cited the mere facts of distribution as above can we safely say that the peculiar intermediate forms of sleeve are intrusive adjustments and as such represent diffused traits from the north?

The first thing that suggests itself is to examine the structural concepts to see how much they may have in common. If we turn to the Atlantic Coast we find a people wearing a robe for an upper garment which is fastened over the left shoulder, leaving the right arm unprotected. This impresses one as a type of costume ill-adapted to the winter climate of the latitude of New York and raises the suspicion that it was devised by a people living farther south. Further, we see an attempt to adapt it to the climate by the addition of a single sleeve for the right arm. This may well be regarded as a specific invention and not necessarily suggested by the coat-like garments of the north. In fact, one must suspect that contact with coatwearing people would lead to the adoption of the coat in toto, as we find the Indian did later from the colonists. The idea of an arm covering could readily have come from a legging, or even less specific sources, simply the idea of wrapping up in something. This is, of course, speculative, but it is well to note the seeming greater probability that we have here a specific invention and not a case of incomplete borrowing. Elsewhere we have shown that the tendency in material culture seems to be the taking over of trait complexes as wholes and not in isolated fragments 1 by which the probability of this being an independent invention is heightened.

If now we take up the Ojibway sleeve we find it on a costume of a different kind. The concept here is not a skirt hung from the waist but a longer one suspended from the shoulders so as to cover the breasts. In such a garment both arms as well as the shoulders are equally exposed. In this case a coat would seem the most natural solution. We are, of course,

¹ American Anthropologist, vol. 16, 491.

dealing with the women's clothing for Ojibway men wore a sleeved shirt. Yet, the women sometimes used the eastern slit skirt with a sleeved jacket. Hence, that the Ojibway women did not exclusively use a sleeved jacket when such could not have been unknown to them, makes it clear that some other factors are involved. In the foregoing type we have again the concept of a sleeve fastened to the neck by a string, encasing the fore arm but hanging loosely over the upper arm and the shoulder. So far as we have data there are no essential differences from the sleeve of the Eastern Algon-The important point here is, that a pair is used instead of one. reason for this, appearing that this body costume leaves both arms exposed. Since the Ojibway through their various divisions were at one time in touch with the main body of Algonkin tribes and have several material traits in common, it is fair to assume that the detached sleeves of both had a common origin. On purely logical grounds, one must suspect that the Ojibway were acquainted with the single sleeve costume before they took to a pair, but this may be far from the truth.

The next case in which technological descent is suggested is the cape and sleeves found in certain Plains dresses. Thus, if we took an Ojibway costume and sewed the shoulder extensions of the sleeves to the front and back of the skirt we should have essentially the same garment as found among the Nez Percé and some neighboring tribes. In fact the structural agreement is so close that a historical relationship can scarcely be denied. Thus, in the skirt as described by Harmon, Henry, Teit, et. al., the two skins from which it was made were folded down at the top and the decoration made upon the pendant flap, and in some of the Plains dresses we find a similar folding over before the material is sewed down to the neck Again, the shape of the inserted neck piece or yoke is about the same as the piece one would cut for the Ojibway sleeve. It may also be noted that the decorations of Plains dresses are in every case on the part of the dress corresponding to the pendant flap of the Ojibway type. Hence, it is difficult to conceive of independent steps that would lead to these correspondences.

Though the origin of the Plains woman's skirt is somewhat obscure, it seems to be a structural concept of two entire skins joined in a definite manner, the tails at the top, the necks at the bottom. Since the skirt covers the entire person and hangs from the shoulders without sleeves, one must again suspect that a genetic relation exists between this dress and the Ojibway type although it is not so convincing as the case of the sleeves because the fundamental structural concept is merely the use of two skins. While this concept is clear in the Plains, it appears among the Salish and again among the Iroquois in less definite pattern associations. Against its accep-

tance may be offered the supposition that the adjustment is nothing but a natural process of economizing in material, and that since the form of a skin was everywhere the same such methods would result as a matter of course. On the other hand, if we look at North American costume as a whole we may see that tailoring, or cutting of materials to fit the body has but a limited distribution. It is among the Eskimo that tailoring reaches a high standard, the patterns seemingly adjusted to the lines of the body and the demands of decoration without regard to the natural contour of the material. Even among the Déné peoples the tendency is marked as shown in certain sketches by Dr. Hatt. In all these garments we find a cut so devised as to fit the coat to the neck and shoulders. Of this the man's and woman's garment of the Plains is innocent, the top of the garment being straight. It is also quite noticeable that certain Salish woman's costumes have this straight cut and even Naskapi coats approach it. On the other hand, as we have noted, some Salish and Iroquois coats show tailoring and shoulder fitting.

Now it appears that the two-skin garment is not conceived upon tailoring lines but rather upon draping the figure, or hanging a covering over it. The tendency to make the most of the natural material is thus after all a part of the process and if it does occur in different localities, we find it as part of a concept complex in which the idea of tailoring is not found. We may, therefore, assume that the two-skin method indicates the presence of an unfitted body covering, usually without attached sleeves. The center of distribution for this type seems to have been the Plains.

Now let us see to what this discussion has brought us. In reviewing the data we had reason to doubt historical connections between the detached sleeves and coat garments farther north, but on the other hand, there was good ground for assuming a historical connection between the sleeves of the Ojibway type and those found upon women's dresses, among the Nez Percé and vicinity. Again, the use of two skins as a structural concept appears to be independent of the tailoring methods of the north and to center in the Plains.

We are sometimes puzzled because, while the point of view in modern ethnology professes to be historical, we often find no historical data available. Thus we may be challenged to show how one can form any safe conclusion as to the origin of these types of costume in the absence of historic data. The place of the latter is often taken by archaeological data, but in this case there are none. Yet, there are some historical data. The Blackfoot, for example, claim to have taken to the sleeveless Plains type

¹ Hatt, Gudmund, Arktiske Skinddragter i Eurasien og Amerika, København, 1914.

of woman's dress recently; the Cheyenne were observed in 1820 vacillating between two forms of costume and later going over entirely to the Plains type. Among the Salish the chronology of the types is not clear, but we infer that the Plains type was used so long ago that it does not appear in Museum collections. Since the time of Carver the Eastern Dakota seem to have shifted from the Ojibway type to that of the Plains. The Assiniboin are first credited with the Ojibway type. This rather clearly restricts the origin of the Plains type to the Nez Percé, Crow, Mandan, Hidatsa, Arapaho, Kiowa, and some of the Shoshoni and since these form a contiguous geographical group, the trait is as closely localized as we can expect.

In precisely the same manner we may treat the data for the shirt. Our collections show that the older specimens are of the characteristic type (Fig. 7a) and that the newer pieces tend toward coat styles. Then we have historical data restricting this shirt formerly to a triangular area comprising little more than Idaho, Montana, and Wyoming in the United States but a much more extensive area in Canada.

It may then be asked if we have not arrived at a historical conclusion by direct means and if this is not a conclusion beyond the range of a comparative distribution of specimens? The answer to this has been given above, when we reached essentially the same result by a comparative study of specimens alone. Yet, the value of historical data is very great and the moral of the case is that such data are usually to be had for the seeking. Ethnological data are based upon direct observation or testimony and so are historic. Archaeological data are quite different for they introduce relative chronology as interpreted from physical conditions.

Now that we have some of the complexities of this problem in hand, we may try to summarize the arguments. In the first place, we have established one so-called genetic fact in that whoever devised the types of dress in the Plains arrived at the particular style from the concept of a twoskin garment; and that the style was in the beginning accidental, but once established survived the abandonment of the two-skin idea. It should be noted that this is quite another matter from accounting for the origin of costume as such, for though there is a strong probability that the twoskin idea centers in the Plains, it would be absurd to assume that it grew out of an original discovery of dress in the same locality. Taking our archaeological knowledge of North America as it stands, we may be sure that the first inhabitants of the Plains had well developed costume complexes. Hence, the only reasonable hypothesis we can form is that the two-skin garment arose when someone set about making economical use of deerskins. We have noted how the poncho idea seems to precede the two-skin and how an effort was made to add sleeves to a true poncho.

interpretation is therefore, that if any original idea arose in the Plains it was the two-skin concept, but that if so, the inventor simply used it to create a garment that combined the ideas of a poncho and a coat. The analysis of the geographical distribution shows that along the Rocky Mountains in the region traversed by Shoshonean and Shahaptian peoples, this type of garment arose. It was not universal since many groups used extensively garments of another type made from woven materials. To the south stretching over parts of two continents was the great textile area where ponchos and sleeveless garments were the mode. To the north were the Déné and Northern Algonkin tribes fringing the Eskimo, the great area of tailored skin coats. The most probable thing is therefore that the poncho of the south was first introduced to the Shoshoni, Shahaptian, and Salish as a part of their textile development, but they were a hunting people in contact with a great area of skin coat wearers and so necessitated an adjust-The compromises they made have been outlined in the previous ment. discussion.

All questions of trait origins should remind us of an important problem, the actual content of a tribe's (social group unit) individuality, or the integrity of its culture. Suppose we take the woman's dress and see in how far, if at all, each of the tribes has individuality. If we take the pattern outline of dresses we note certain differences but relatively little variation within the tribe. A glance at the map (Fig. 27) will show how these are distributed. The two distinctive parts are the bottoms of the skirts and the shoulder extensions. Yet even in this respect a tribe can scarcely claim individuality for the Sarsi, Blackfoot, Assiniboin, and Nez Percé are the same. Again we find the Cheyenne, Arapaho, and Kiowa quite identical. The Dakota and Shoshoni form another group. The Hidatsa, Crow, Ute, and Apache have something in common also. The important point, however, is that these have a geographical grouping rather than a random one, thus precluding the idea of a chance agreement.

In shoulder forms there is a little more variation within the tribe and some more individuality. Thus in Fig. 28 are all the forms we found and a list of the tribes using them. The prevailing forms are shown in Fig. 27. The Dakota have two patterns but one of these is suspiciously like the man's shirt, while the other is almost identical with the Cheyenne cut. In the case of the Blackfoot, Assiniboin, and Hidatsa on one side and the Arapaho, Shoshoni, Kiowa, and Apache on the other, we have again geographical grouping.

If we take the patterns for cloth dresses, or those made of heavy strouding, we find precise uniformity throughout. The cut is plain and rectangular, Fig. 21.

It is thus clear that exact tribal individuality will be limited to very trivial and inessential features of the pattern and often lost in the range of inter-tribal variation.

The man's shirt presents greater variation, but again we find the bottom

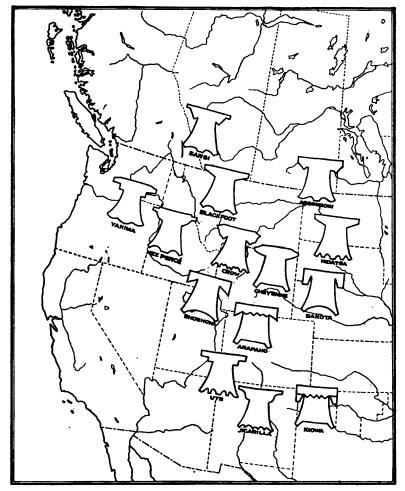


Fig. 27. Distribution of the Plains Type of Woman's Dress.

of the garment distinctive, the several types and their distribution being given in Figs. 7-9. It should be noted, however, that the specimens following patterns of Figs. 7a and b are the oldest in the collection and that the many and widely distributed coat-like patterns of Fig. 9 are dis-

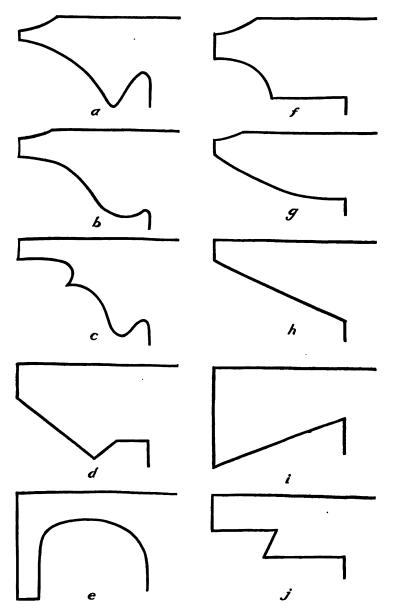


Fig. 28. Cape Patterns for Women. These are schematic and not accurately drawn from particular specimens as in Figs. 19 and 20. The observed distributions are as follows: — a Crow; b Jicarilla Apache, Nez Percé, and Yakima; c Taos; d Assiniboin and Sarsi; e and f Dakota; g Cheyenne; h Assiniboin, Blackfoot, and Hidatsa; f Arapaho, Apache, Kiowa and Shoshoni; f Ute.

tinctly recent. Yet, making due allowance for this disturbing factor there still appears a tendency toward geographical grouping in variations of the older patterns while the others seem to be almost universally distributed.

The sleeves of shirts are somewhat analogous. The older specimens follow the forms of Figs. 7a and b while the newer ones tend to the simple parallelogram cut of Fig. 9 which is found among all tribes.

Thus we find that none of these details in pattern or cut can be exclusively assigned to a single tribal group but are found more or less continuously distributed. This distribution is much more restricted than that of the fundamental pattern which we have shown to prevail in the Plains, but still indicates considerable diffusion. Should one be minute enough and possess a sufficient number of examples it would be possible to isolate further individualities but these seem to be little more than the personal equations of the individual cutters. A generalized view would be that the fundamental pattern is widely diffused and the secondary features less so. We have seen how the Plains type inter-relates to the Ojibway type, etc., which indicates that we are dealing with a true complex in which the more fundamental the idea the wider the distribution.

Investigations of this character are revealing what may prove to be an important general method in the study of culture. We have in the course of this discussion developed the specific fact that centered in the Plains we find a mixed type of costume which upon analysis presents fundamental elements prevailing in two great contiguous areas. Were this the only case of the kind it would have nothing more than a specific significance but a similar condition is found in some other traits noted in the writer's discussion of material culture.1 In the concluding sections to Volume XI of this series, the same condition is found with respect to certain shamanistic concepts and societies; hence, it is not merely a characteristic of material culture but one of general application. We have shown in the preceding and the discussion of societies just cited, that recognizing this as a point of departure we can by analytic comparisons arrive at fairly satisfactory conclusions as to the historical and chronological relations of the traits involved. It seems therefore that when we find a trait complex showing intermediate forms and associations between the complexes of two geographically opposite areas, we may safely assume that its origin is due to the assimilation of borrowed concepts.

¹ American Anthropologist, vol. 16.

SUMMARY.

Some of the points of general significance developed in the preceding discussion may be formulated as follows:—

- 1. We have satisfactory proof that the characteristic style of garments for both men and women in the Plains area, was suggested by the natural contour of the materials used, or rather resulted from an economic use of the same. It is also shown how quickly the features determined by the shape of the original materials disappeared when trade cloth came into use, though the fundamental pattern remains the same, indicating that this pattern or general concept was one of structure rather than of adapted material. This leads one to suspect that the pattern concept came first to a skin-using people from some external source, most likely from the textile ponchos of the south.
- The concept of tailoring, or cutting a garment to follow the lines of the shoulder and trunk is found in America only among the coat-wearing tribes: viz., the Eskimo, a few northern Algonkin, and the Déné, with minor representation among the Iroquois and interior Salish. Our data show how the idea tends to spread by increasing contact with Europeans. the Old World tailoring appears again among the more primitive peoples of the north, but in historic peoples first among the Chinese. Its appearance in Western Europe is relatively recent. The idea of tailoring cloth seems not to have been developed by people anywhere except in Central It seems probable that the extensive use of the toga-like garment and the rectangular poncho, especially the latter, was due to the limitations of the weaving process and that here again the unavoidable rectangular contour of textiles is responsible for the fundamental similarities of styles. The Chinese on the other hand, escaped from these limitations by the development of tailoring. This presents another important problem: viz., did some of the northern tribes invent tailoring out of the necessity of the case or borrow it from some more highly cultured people in Central Asia? One may suspect that the Chinese were the borrowers, but in the absence of investigation this should be given little weight. In any case in the New World we find these two contrasting types of garment structure, tailoring prevailing in the far north and the opposite in the remainder of the continent, including the area of specialized textiles.
- 3. In respect to the area covered by the detailed comparisons in the preceding, it is clear that scarcely a single important feature of a given garment is peculiar to a single tribe but that two or more in geographical continuity share it equally. It also appears that the more fundamental a

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given feature, the wider its distribution. In other words, a tribe's individuality is merged into the mere personal variations of individual workers, and so far as these specific traits go, the limits of the social group have no significance. Perhaps after all it is only in traits of culture where several individuals must actively cooperate, as in ritualistic performance, that the social unit is of consequence; or, unless the social unit as such functions in a trait in contrast to individuals, may we expect the bounds of the social unit to correspond with the bounds of the trait in question.

- 4. The preceding data may also serve as an approach to a question of validity in evidence. Thus, we may ask in how far mere comparative studies in the forms and distributions of traits can give light upon the historical associations of traits? The suggestion in this case is that if the search is pushed far enough, the necessary data for a satisfactory conclusion may be found. For perishable objects, such as costume, real historic data is usually obtainable; for the more durable, as stone, ceramics, etc., archaeological methods give a definite relative chronology. Another important problem is as to the determination of genetic relationships in technological processes by a logical analysis of the concepts involved. Within the limits of this study this is little more than a restatement of the above historical problem since the specific point is as to which of these types of dress, or parts of dress, as sleeves, yoke, etc., suggested or developed into the other; but when extended to the clothing of the continent or the world, tends more and more to be purely a problem of genetic relationship. The scope of the preceding investigation is too limited to give a concrete example of this problem, and while it suggests the great difficulty of arriving at the truth without the aid of supplementary historical data, it does suggest that the future may see developed a few principles of culture diffusion which taken with the analysis of technological concepts will lead to safe conclusion as to their genesis.
- 5. Finally we have found in this material trait a good case of culture diffusion. That the secondary features such as cut of skirt-bottoms, sleeves, etc., when found to be the same for two or more tribes are so because of tribal independence in invention, is scarcely admissible because of the observed geographical continuity. A random repetition of specific inventions should also have a random distribution to be consistent with the laws of accident. Likewise the fundamental structural concept which underlies these secondary concepts while very widely distributed is also continuous, whence it follows that the diffusion hypothesis is the most acceptable. We do find one disconnected locality for the two-skin concept among the Iroquois; but since these people were great travelers and had other costume concepts in general use, we may hesitate to credit them with its independent invention.



ANTHROPOLOGICAL PAPERS OF THE AMERICAN MUSEUM OF NATURAL HISTORY

VOL. XVII, PART IV

BASKETRY OF THE PAPAGO AND PIMA

BY

MARY LOIS KISSELL

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PUBLICATIONS IN ANTHROPOLOGY.

In 1906 the present series of Anthropological Papers was authorized by the Trustees of the Museum to record the results of research conducted by the Department of Anthropology. The series comprises octavo volumes of about 350 pages each, issued in parts at irregular intervals. Previous to 1906 articles devoted to anthropological subjects appeared as occasional papers in the Bulletin and also in the Memoir series of the Museum. A complete list of these publications with prices will be furnished when requested. All communications should be addressed to the Librarian of the Museum.

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(Continued on 3d p. of cover.)

BASKETRY OF THE PAPAGO AND PIMA.

By Mary Lois Kissell.

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PREFACE.

The investigation herein reported was made during the winter months of 1910-1911 in some two dozen Pima and Papago villages, as a part of the Museum's systematic study of the peoples of lower culture in southwestern United States. All the principal villages of the Santa Rosa Valley and foothills were visited, together with those of the Santa Cruz near Tucson, including San Xavier, Kioto, Little Tucson, Indian Oasis, Big Fields, Cababi, Comababi, Vinumuku, Conquien, Quijotoa, Kuvuhea (Chewak), Twavaheu, Brownell Camp, and Noepa; as well as the Pima villages of Kuu Ki, Hassanykuk, Saopuk, Talsituk, Oskuk, Wetcurt, Rsotuk, Hermho or Amn Akimult, and Babychurl. Acknowledgment must be made for the identification of the plants employed in basketry to the staff of the botanical department of the University of Arizona; and for very courteous hospitality to Rev. and Mrs. Herndon, Indian Oasis; Mr. Day, Quijotoa; Mr. Brownell, Brownell Camp; and Mr. R. Rasmessen, Tuscon. For the drawings the author is indebted to Miss Ruth B. Howe and for the photographs of specimens to the Photographic Department of the Museum, for that of the Papago granary to the United States National Museum, and the basket maker within her storage bin to Putnam and Valentine, Los The outdoor photographs were taken by the author, often under very adverse conditions, but the subjects presented are in the main new. The expenses of the field trip were contributed by Mr. Archer M. Huntington.

April, 1916.

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Introduction.

This paper presents material obtained during three months of research in southern Arizona among the Pima-speaking tribes — the Papago and Pima proper — and records some of the results of an intensive study of their textile arts. Dr. Russell's comprehensive treatise on "The Pima Indians," and Dr. Lumholtz's "New Trails in Mexico" give a general survey of the ethnology of these two tribes. It is the purpose of the present paper to deal solely with their basketry, since there are important points related to this art heretofore undiscussed; and to include descriptive matter pertaining to technical details of present-day processes, with reports of former methods now abandoned, but still within the memory of the tribes; beside explanatory matter concerned with conclusions drawn from this information and from observation. Technic of itself has only economic value, its scientific significance lies in its bearing upon some theory, or problem, that is in the disclosing of some hidden truth.

The aim of the expedition was not only to obtain exact details as to the processes and the materials employed in this art, but also to procure the more interesting and important data concerning beliefs, sayings, and magic connected with the art or its processes. In other words, to find all the lore pertaining to the textile arts especially that of the basketry, should there be any, and still be known to the present-day Indian. This together with information concerning symbolism in design, constituted the two points of greatest importance.

As is frequently the case in field investigation, the data most earnestly desired may prove elusive and not materialize, while in its place other data are secured bearing on totally different lines. So it proved in this instance, that while full details as to the processes, tools and materials, together with interesting related facts, were easily obtained, the two topics believed to be of greatest moment yielded scanty results. This may be attributed to one of two causes: either to the absence of basketry lore because it had been forgotten, or had never existed; or to the very brief acquaintance with individual Indians, which was all the short trip afforded, as the three and a half months allotted to more than twenty scattered villages were insufficient for other than casual friendships. Longer acquaintance might have established an intimacy with individuals, such as would invite confidences and disclosures of sacred lore. It is hoped that later investigations, especially among the very old women, will unearth such data if they exist.

As has been said, religious meaning attached to basket materials, their

gathering, preparation, or employment in construction seems entirely The art appears to be purely a practical one, prompted by practical motives only. This is not absolutely so, however, in connection with the use of three of their baskets — the small food basket of the medicineman, the basket drum, and the rectangular trunk shape for holding ceremonial medicines and paints. This last is made only by the Papago, and employed exclusively for this purpose, while its size is carefully fitted to hold some specific medicine. The basket appears to have no ceremonial significance in itself, its function seems to be purely utilitarian, that of holding the ceremonial articles when not in use. The food basket in question is a deep tray of small circumference, so closely constructed as to hold water, and is used by the medicineman to hold food and drink while he is performing the ceremonies for healing the sick, for bringing rain, and when on his pilgrimages for the sacred salt. It is made for this purpose and used at no other time, but whether its function was more than utilitarian, knowledge was not. The basket drum is also a tray shape, but it is not constructed for this particular use, nor is it reserved for this exclusive service. basketry tray at hand will do, if it is hard and firm enough in build to emit a loud sound when inverted and struck with the hand or a stick, since the beating upon it accompanies the chants of the medicineman at ceremonial dances, or when making his cures. The basket trav of these peoples is a food tray, and whether for this reason there is in it some magic which imparts efficacy to the rhythmic accompaniment is not known. It is more probable that it is merely a convenient thing upon which to beat, hard enough to resound when struck.

The most important result of the expedition was the finding of a distinct differentiation between the Papago and Pima coiled basketry, a technic to the perfection and decoration of which these tribes have devoted their leisure time and effort. Such a technic in any tribe acquires the highest development of the arts belonging to that particular people, thus receiving the impress of a character of its own. Here the coiled basketry of these linguistically related tribes was found to have such distinguishing and diverse qualities as to make apparent that the art in each tribe was distinct. This discovery gave the incentive to secure as many as possible of the few remaining old-time water-tight bucket-baskets of the Papago. This was done, resulting in a collection, which with two old basket bowls from the Lumholtz expedition of the previous year, make this small but choice group of old Papago coiled ware, not only unique, but rare, since very few of these baskets remain, owing to the influx of civilization and the Papago custom of burning at death all the belongings of the deceased.

Only the beginning of a very interesting study of the differences in

Papago and Pima coiled ware has been made, an investigation which has every appearance of being an important one, since the facts gathered show this cultural difference in the tribes and possibly point, as suggested by Dr. Fewkes, who has examined the results of the expedition, to a further discovery that the Papago are related to the old prehistoric people of the area. Further research, especially in the unfrequented villages in the foothills of the Quijotoa, Comobabi, Baboquivari and neighboring ranges, will no doubt throw additional light on the age of coiled basketry, its design names, and the old design itself, for frequently direct design study yields more satisfactory results than dependence upon Indian report.

These differences have every appearance of being a direct result of personal characteristics, for the individual traits of the tribes seem stamped upon the baskets of each. Papago baskets with solid substantial qualities resemble dominant Papago peculiarities; Pima baskets with lighter more pliable properties represent the Pima temperament. Some of these dissimilarities are due to the materials employed in manufacture and some are a result of function, thus accounting for certain structural diversities, namely, flexibility and solidity, beside general items of shape. But these utilitarian agencies give no satisfactory interpretation to divergence in design, or the finer subtler qualities in proportion, contour, build, and finish.

Reaching backward into the past to interpret the art of the coiled basketry in times gone by, reveals interesting data as to habits and methods, but the present also offers data for record, since Papago and Pima basketry means to the world today the art as it is now being practised. An important contribution to the subject, therefore, is a registry of present-day practice, as influenced by the influx of civilization, since each tribe has responded to this impelling agency, but in different ways.

The basketry of these desert tribes illustrates, in an individual way, the relation between the arts of people of lower culture and their environment. On this account, and to facilitate comparison, their habitat and its vegetation have been described at some length, for as plant life has become structurally modified to harmonize with surrounding arid conditions, so basketry construction, through man's instrumentality, has in a similar manner been adjusted to the desert flora. Suitable material for a number of common basket technics is lacking, and so excludes these; available material for those that are present, is in such limited quantities as to demand the exercise of much skill in discovery, selection, and adaptation. As would be expected, these technics show a most interesting interrelation with desert materials, which on account of the general distribution of the same plants throughout the area, furnish both tribes with certain similar technics; and owing to the location of other materials in the habitat of but one tribe, supply each



with a different technic; while because of a slight differentiation in the materials employed on a similar technic, distinct characteristics are given to each.

Of the technical points introduced, perhaps the most valuable is the suggestion of a possible evolution of two technics in the region — wrapped and lattice wrapped weaving, and foundation coiling. Another important item is the presence of the plaited center on coiled basketry which suggests that plaiting was here an earlier technic than foundation coiling. Considerable effort was expended in obtaining the rhythmic movement in the construction of plaiting, a movement which is always in threes, as it was thought this might prove an interesting likeness, or difference, to the rhythmic movement on plaiting among other tribes, and also give some further knowledge as to development of counting, or number, among people of lower culture. Detail in the technic of lace coiling seemed of value because of the elaborateness in pattern on the kiaha carrying frame which is fast passing into disuse. To make clear any technical terminology which might be misunderstood, the basketry classification made by the writer in 1909, and which this paper follows, is added as an appendix. (See Science, n. s. vol. 30, Dec. 24, 1909.)

Навітат.

The Papago and the Pima tribes are located on the Pacific coastal desert of southwestern United States and northwestern Mexico. habitat of the Papago, Papagueria, occupies the southern portion of the area, and extends from the Gila River southward over a considerable part of southwestern Arizona and of Sonora. The region is an undulating plain with an elevation, at its greatest height, of about three thousand feet, from which it inclines gradually toward the west. The territory is crossed by broken mountain ranges extending north and south, whose slopes have been greatly reduced, mainly by wind erosion, which has swept the soil into the flat valleys between. In Arizona, these valleys are dry, except that of the Santa Cruz which is drained by a characteristic desert stream. has a flow of great volume in the rainy season, but one so inconsiderable during most of the year that it might aptly be termed a brook. To the west and south of the Santa Cruz Valley is that of the Santa Rosa, long and narrow in shape and, as has been indicated, of the dry type. Through it, in all probability, there once flowed a great river which is now covered with soil from the mountains on either side. This is the very center of the Papago country, for in the foothills of the Quijotoa and Comobabi mountains, which border the Santa Rosa Valley, and the neighboring Baboquivari Range, are scattered many of the Papago villages. Possibly in no other spot in North America has the Indian been less influenced by white men, so that old customs persist, even to the tattooing of the face by the older men and women. It was the villages of the Santa Rosa Valley and foothills, together with those of the Santa Cruz near Tucson, which were visited by the expedition, including San Xavier, Kioto, Little Tucson, Indian Oasis, Big Fields, Cababi, Comobabi, Vinumuku, Conquien, Quijotoa, Kuvuhea (Chewak), Twavaheu, Brownell Camp, and Noepa.

Many of the permanent villages are located in the foothills, where there is better grazing ground for the herds and water can be reached by sinking wells to the depth of from twelve to forty feet, while in the valleys it is estimated that water cannot be reached short of two hundred feet. Nevertheless, it is in the flat, dry valleys that the villagers plant their fields, since the Papago primarily are agriculturists, although they also obtain wild food, both vegetal and animal. The water supply for the fields is furnished by the scant rainfall, and by surface water which collects during the rainy season in a few water holes. From these, it is distributed by means of irrigation ditches. At the planting and harvesting season, the villagers move down into the valley, and usually remain there until the water holes

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are empty. Upon quitting the fields for the foothills, they station a few of their number to act as watchers, who care for the crops. This seasonal migration between foothills and valley means a change of habitation four times during the twelve months, owing to the fact that there are two crops annually. The frequent moving, however, does not seem to disturb the Papago Indian in the least, for with apparent ease he loads his wife, children and household effects upon a couple of horses, or burros, and starts off, These beasts of burden, almost hidden beneath bundles. himself on foot. baskets, pots, women and children, are not unusual sights as they follow some lonely trail across the desert. When the migration will take place is uncertain, since weather conditions are so changeable. So it often occurs that one reaches a village in the foothills at a season when one would expect the Indians to be there, to find most of the huts barricaded and many of the people gone to the fields; or one reaches the fields in the valley, to find they have departed for their homes in the foothills, since the varying atmospheric conditions of the desert require a similar adjustment of domestic affairs to fit the requirements of the crops.

These arid valleys only need water to make them fertile gardens, for even with the limited supply at hand the soil yields two crops annually. Wheat, maize, beans, pumpkins, squashes, and melons are most cultivated. The seasons for planting and for harvesting must, of course, vary with the irregularity of climatic conditions, so that wheat is sown sometime between October and Christmas, and gathered about May; corn is planted in the neighborhood of the first of August, and harvested sometime in October. Formerly, the men cleared, planted, and irrigated the fields while the women gathered all the crops with the exception of the wheat. This was transported by the men on horses, whereas the women carried the other products in their kiahas, or carrying baskets on their backs. Woman's labor in the field has been greatly lightened by the introduction of a few modern conveniences, notably that of the wagon. However, when her help is needed, she is seen in the fields performing her old duties as well as those of the man.

The habitat of the northern group, the Pima, lies to the north of Papagueria, in two river valleys, the Gila and the Salt. These rivers during the rainy season are rushing torrents, but through most of the year their beds are entirely dry. Nevertheless, even these fluctuating streams have drawn the Pima villages to their banks, since water, one of the greatest necessities to human life in any climate and doubly needful in an arid land, has attracted the Indians to the neighborhood of its supply. The Pima habitat is much smaller in extent than Papagueria, and its villages are much more closely grouped. Those visited at this time were Kuu Ki, Hassanykuk, Saopuk, Talsituk, Oskuk, Wetcurt, Rsotuk, Hermho or Amn Akimult, and Babychurl.

Like the Papago, the Pima subsist upon both animal and vegetal food, although mostly upon the latter, and usually upon that which is cultivated. Their fields are not at a distance as are those of the Papago, but adjoin the villages, or are in the near neighborhood; thus migration between village and field as practised by the Papago Indian is not necessary. The water supply for the fields was formerly furnished by the rivers, but now that the white man is making use of the headwaters of these streams, and diverting a considerable supply, it has become necessary for the Pima to depend more and more upon wells. The fields have suffered greatly from this use of well-water, and are in a much poorer condition than when they could depend entirely upon the rain and the river-water, since the well-water is alkaline in character, and also lacks the enriching sediment which is brought down by the rivers. The products raised by the Pima and their methods of planting, harvesting, and transporting are similar to those of the Papago, although here customs of civilization have entered more largely. The seasons are slightly later than in Papagueria: wheat is sown in April, and reaped in June; a first crop of corn is planted in April and gathered in June, while a second crop of corn is planted in July, and harvested in October.

The desert home of these tribes is one of the most interesting spots on the American continent. Its lonely stretches, even in its most desolated parts, are not entirely without vegetal life, for it is thinly scattered over with stunted trees, hardy bushes, and prickly cactus plants. A cursory glance at the parched plant life and the baked earth makes it difficult to realize that only dearth of rainfall makes this region what it is, and that a supply of water would bring blossom and fruit in profusion, where now desolation spreads over much of its extent. Yet, it is the very desolation of these vast stretches, their immensity, and their impressive solitude which charm and fascinate. The broken mountain ranges rise abruptly from the Their highest ridges are sparsely clothed with unexpected pines and oaks, for in consequence of their altitude the peaks receive an annual rainfall of thirty or more inches. With the lower mountains it is quite different, their leaden sun-baked slopes are mostly barren rock. The foothills show another change, as they again take on a vegetation, but one which is characteristic of the desert, with many strange spiny plants. In the valleys another vegetation appears, the typical plant life of the desert gives way to a vegetation with softer foliage, a direct result of more moisture. The scattered willows and cottonwoods along the river banks are examples of this. The valleys in Papagueria are usually long and trough shaped, flanked on either side by mountains, while those in the Pima country are more circular, and frequently surrounded on all sides by mountains.

This desert area with its low ranges and flat valleys is a land of sunshine.

One is impressed on entering the region of the dearth of everything save sunshine, for it is the dominant note. The summer sun pours down its pitiless rays, resulting in baked mountains, arid valleys, and parched vegetation. The winter sun, although less hot, continues to shine one day after another, with scarcely a cloud to mar the sunshine, and only a few rainy days in the wet seasons. It is during the short wet seasons of midsummer and midwinter that most of the rain is precipitated, and then the fall is only slight, except upon the highest ranges. Frequently there are years when there are no wet seasons, then the whole area suffers from drought, sometimes eighteen months pass without a drop of rain. In this dry land the sun has left its imprint everywhere and upon everything. Its intense heat has not only taken up every particle of moisture from the land, but from the air as well, leaving it remarkably light and clear. This clearness brings remote objects very near, greatly disturbing and preventing correct calculation of distances. It plays innumerable atmospheric tricks in this way, painting in the air at early morning and evening wonderful mirages of mountains and lakes, whose deceptive forms have frequently led many a weary traveler from his way, with disastrous results.

As has been said, the slight rainfall, the intense heat, and excessive evaporation have most perceptibly affected the vegetation of the area. plant life has protected itself against the severe climate in most interesting ways, but with typical desert vegetation the adjustment is the most extreme, so that accordingly plant life has assumed shapes and structures particularly adapted to these adverse conditions. Some plants have enlarged their leaves and stems into thick pulpy forms, to act as absorbers of moisture and as storage reservoirs. An excessive amount of water can be collected in these thick forms during the rainy seasons, to serve as a supply for the plant during the periods of drought. Noticeable instances of these oddly transformed plants are the giant cactus saguara with its high fluted columns, at times rising forty or fifty feet in the air; the prickly pear with queer flat-oval jointed stems; and the melon or barrel cactus, which in its larger varieties, holds from six to eight gallons of water. This last cactus is most useful in this particular, as the water stored within it, has many times saved the life of man and of beast. Plants with enlarged stems are more fantastic in shape than those with enlarged leaves, yet these last are unusual, with their long leaves which encircle the central stem very much thickened for the storage of extra sap. Among these are the agave, or century plant, with spiked leaves of great weight; the palmea with narrower sword-like leaf, edged with saw teeth; and the yucca of similar shape, but with knife-like edged leaf.

Plant protection is not only accomplished by the storage of water, but

also by the preventative means taken for lessening evaporation. This is effected by diminishing the exposed leaf surface, and by coating the leaf and the stem. For decreasing the leaf surface, trees and shrubs may reduce the leaf to a very small size; they may transform them into spines or thorns; or they may dispense with the leaf altogether, when nothing remains but a bramble of stems. Someone has very aptly likened one type of desert plant, the cactus, to a great pin-cushion whose pins have the points turned outward. This very vividly impresses itself upon one in a land where there are hundreds of different cacti all bearing spines, for even the ground is not exempt, but is covered with small varieties whose sharp points even pierce through shoe leather.

An_eexcellent example of the taller plants with pin-like foliage is the beautiful cholla. It is a strange shrub-cactus with a ragged foliage in great bunches of barbed spines, and presents a most imposing appearance, like a huge bouquet of silver-green thistles, with a sprinkling of pale yellow in fruiting season. Two other plants of the bramble type are the crucifixion thorn, with exceptionally long needle points, and the ocatilla, with long willowy stems, which in the wet season bears fine little leaves, but which in the dry season are replaced by thorns. A slight acquaintance with weather conditions on the desert, makes very clear the reason for this scant foliage, and explains why so many plants are thorny. This, however, is but the part of the protective scheme with which nature arms herself to shield herself from the weather; for the bristling forms also keep away animals which might attempt to get too great a quantity of the stored water, so much desired by them, but equally necessary for the preservation of the plant.

A second means for lessening evaporation is employed by all kinds of plants, it is a coating of the leaf and stem surfaces with an impervious covering. This varies with different plants, as some have hardened and waxed the skin, while others have shellacked it with a resinous substance like varnish, but all in one way or another, have brought the surface to a close texture or glazed it. In these ways vegetation has protected itself: the cacti with many spines; the beautiful paloverde with coated green stems and feathery foliage; the mesquite with long roots, seeking deep underground moisture; the occasional willows and cottonwoods along the dry water courses, together with the few other plants. Forbidding as this region may seem, the charm of its weird and wonderful vegetation, its clear atmosphere, its sunset colors, its mysterious night, and its phantom mirage, makes it far from an unpleasant spot. To the Papago, in their foothill villages among the mesquite and the cactus, and to the Pima, among the cottonwoods and willows along the Gila and the Salt, belong the beauties of the desert as well as its many discomforts and limitations.

The general physiographical and botanical characteristics of this desert home have been lightly sketched as they are so strongly reflected in the textile arts of these people. As plant life has been compelled to adapt itself to the physiographical and atmospheric conditions of the arid environment, so likewise the Indian has had to follow in the same path and fit his arts and industries, his devices and methods of meeting daily needs to the conditions of his physical surroundings. Destitute of material suitable for textile work, as this environment may seem, these Indians have adapted that little to their need. This, of course, is true of all aboriginal industry, but the extreme conditions of the desert simplify things to the lowest terms, so that it is easy to trace influences and to draw conclusions because they are so self evident, as is impossible to do in regions more copiously supplied by nature.

INFLUENCE OF ENVIRONMENT.

It is a recognized fact that the culture and industry of any civilized nation is biased to a large degree by the geographical characteristics of its locality, for there are "ties infinite in number, which bind life to the earth." Even more easily traced is the bias imposed by the climate, topography, flora and fauna of a region upon the arts and life of people of lower culture, since here means of communication and transportation are restricted, although not entirely limited, but enough so to render exchange with distant peoples impracticable. The dependence of the culture of early peoples upon environment is a subject widely discussed by ethnologists, who have shown conclusively the stamp it has placed upon the arts of a particular area. Likewise, the studies of ethno-botanists have pointed out very definitely, though in a narrower field, the relationship between plant life and the technic employed in the various industries. In none of these industries is the interdependence more pronounced than in textile manufacture, for as Mason has said:—

There is no work of human fingers that furnishes a better opportunity for the study of techno-geography, or the relationship existing between an industry and the region where it was developed than the textile art.²

The reason for undertaking this much considered topic in its relation to the basketry of these tribes, is because it works out with such nicety in the Papago-Pima geographical area. Environmental influence can be traced in the textile arts of any locality, but it is more adequately shown

² Mason, O. T. "Woman's share in primitive culture," 41.

¹ Brigham, P. "Problems of geographic influence," Science, Feb. 9, 1905.

in an arid region. The very scantiness manifests this minutely and the governing influence discloses it more plainly, so that dearth of materials makes possible the drawing of closer distinctions and surer deductions than could be made in a richer environment. When one recalls the vegetation of this region, as described in the last chapter, he will surely ask, "Where indeed among these parched, spiny plants and shrubs can be found suitable material for the manufacture of basket receptacles and utensils in which to collect, store, and prepare for cooking the various foodstuffs, and to supply other household demands?" With all the protective means employed by desert plants to keep them provided with moisture, none seems sufficiently successful in this, to yield other than brittle dried-up stems and twigs, so that suitable material is indeed scarce. Nevertheless, the Indian woman finds that even the desert affords a sufficient supply, although it requires much effort and skill to discover just what is of value. Long years of painstaking search were necessary in the preparation and adjustment of these to the function at hand, but in all this she has been successful. manner in which the Pima and Papago women have made this selection and adjustment, the way they have economized the scant supply of the few best materials, and have adapted to the greatest advantage the less desirable ones, show much ingenuity and invention.

Like all desert regions, this one furnishes many unique examples of the adjustment of plant life to climatic conditions, as pointed out in the foregoing chapter, where it was shown how the geographical surroundings had hindered plant growth, and how plant life in its desperate struggle for existence had effected an adaptation to overcome hindrances of habitat, by bringing to pass certain physical changes, such as modifying the structure to provide for the storage of moisture and to prevent the loss of the same by evaporation. In like manner, this desert vegetation has exerted an influence upon the material activities of the tribes, and the tribes in turn have adapted these activities to the limitation of the desert. Indeed, these austere conditions have rendered it necessary to put forth strenuous effort to perfect the adjustment. It is interesting to trace in Papago and Pima basketry, the restrictions imposed by the thorny, spiny vegetation, which proves but crude material for basket work. These brittle spiny stems and leaves set their imprint upon this art, and determine to a large degree the method of construction, both as to kind and quality of technic, for as marvelously as the vegetal life of the region shows the effect of adverse conditions, just as wonderfully does the basketry exhibit the imprint of the unsuitable materials furnished: Papago basketry that of the plant life of the foothills; Pima basketry that of the vegetation of the river valleys. of the material required in the construction, certain technics are allotted to



both tribes, and others are assigned to each tribe, while similar technics common to both show noticeable variation from the same cause, that of available material.

The most striking fact in the relation between environmental conditions and the basketry technology of the region is that this agency has excluded the two most common kinds of weaving, wicker and twined, which are generally found in regions where basketry is practised. The usual plain weaving, or wicker, a technic almost universally employed by aboriginal peoples throughout the world when a heavy style of construction is demanded for rougher domestic purposes, is notably absent. Wattling, or twining, another type of weaving which, with wicker, is an equally frequent technic for strong basket ware the world over, is also not present. An abundance of bendable twigs, or splints is required for the manufacture of these two technics: strong, slightly flexible ones for the foundation element, and slender supple ones for the binding element. On the desert, pliable twigs, or even semi-pliable ones are scarce, and the scant supply from the few willows and cottonwoods along the streams does not warrant their use in the wholesale manner demanded by wicker and twined weaving. few pliant twigs are too precious for this; each twig must be made to cover as great a surface as possible by being split many times and thus serve as a number of strips. The utilization of these thin strips necessitates another kind of basketry than that of weaving - coiling - where a more economic employment of the limited flexible material is possible. Hence, the exclusion of the heavy openwork technics of wicker and twined weaving and the development and extensive use for heavy coarse structures of the third type of weaving, wrapped weave, a technic whose presence is due to desert conditions (Figs. 1-10). Dearth of sufficient material, save stiff slats and rods for the foundation and strips of hide, thong, and other cordlike material for the binder, make possible wrapped weaving of two varieties, plain wrapped weave, and lattice wrapped weave (p. 140). Here the technic serves most frequently for staying and strengthening bands, quite rudely made, and difficult to recognize as similar to the close textures of lattice wrapped weaving on bags and caps of the Nez Percé Indians, baskets and hats of the Makah Indians, baskets of the people of the Lower Congo, or the colored borders of the beautiful flax robes of the Maori of New Zealand, where finer materials make possible these closely woven and refined Neither can it be compared with the coarser strong openwork wrapped weaving of the Filipinos, or the Malay Islanders, who have at hand the pliant bamboo in place of the stiff desert materials of these tribes.

The materials here are of the crudest kind. The giant cactus, Saguara (Cereus giganteus), has a wide distribution in the higher and lower foothills, with a scattering down to the plains, and is therefore accessible to the

inhabitants of the foothill villages and not far distant from those in the alluvial bottomlands. It is split open, and the great stiff ribs furnish light firm rods and slats which will serve as a firm foundation element. The long roots of the widely distributed mesquite tree (*Prosopis veluntina*) supplies another material, but one harder to get, as it must be dug; still, it has a serviceable quality when a curved foundation element is desired, as for cradles, since it can be bent when still green. In the valleys the cactus is supplemented by another equally suitable material when small foundation rods are needed, the stems of the arrowbush (*Plucea borealis* and *Plucea sericea*). A pliable binding element was not so easily discovered, since plant life yields nothing save the too precious willow and cottonwood twigs. So the Indian woman was obliged to search elsewhere, and has found in animal sinew and thong suitable binding materials, while civilization has added two others, strips of cotton cloth and wire.

Another technic found in both tribes and one contrasting sharply with the heavy wrapped weaving is lace coiling, a light airy basketry technic made possible by the presence in the region of the fiber yielding plants: agave (Agave sp., Agave heteracantha and Yucca elata) among the Papago; and the maguey (Tasulirioni Wheeleri) among the Pima (see p. 225). As these plants grow in the higher hills of the two habitats they are easily accessible to both tribes, although to procure them the Pima must journey farther from their home in the valley than the Papago from theirs in the The tribes constructed their kiahas or carrying frames of the lace foothills. The early Pima kiaha, judging from the one collected by Edward Palmer 1 in 1885 and now in the Smithsonian Institution, differed in shape and intricacy of technic from that used later by both tribes, and now made exclusively by the Papago. Its inverted cone shape was taller and more tapering, the open lacework was of simple design, with the appearance of having been made entirely for service. Its frame was not prominent or distinctive, neither did its four poles extend below the lace cone, and only a short distance above. They crossed just below the lacework, and then followed the lace wall of the slender cone to its rim without much spread, and were cut short a little above it. This Museum also has a small kiaha (65-168) of similar shape collected in 1895 from the Cora. Its frame is of a wood like bamboo and its lace covering of simple design. The Papago kiaha of twenty years ago is notable for its elaborate openwork covering and conspicuous frame (Figs. 75-79), and its form is a more shallow cone, in contrast to the deeper cone of the early Pima shape, while the covering is not of plain lace coiling, but one with complicated pattern, surpassing in elaborateness that of lace coiling from other tribes. The framework also dif-



¹ Mason, O. T. "Primitive Travel and Transportation," Rept. Nat. Mus., 1894, 470.

fers from the early Pima kiaha frame as it holds a prominent place, stretching its four poles far above and below the lace cover, with a rapid spread as they follow the wall of the shallow cone. Two of the lower ends continue some thirty centimeters below where they cross (Fig. 75), thus affording a support when the kiaha stands for loading, or when not in use; likewise, two of the upper ends, the front ones at times reach a length of ninety centimeters (Fig. 80–81). It is these spreading, sprawling poles which give to the Papago kiaha its strange spider-like appearance (Figs. 75–81).

Kiaha use has experienced a change within a score of years. Twentyfive years ago there were two styles of kiahas, a Pima type, and a Papago type, while today there is but one, the old Papago kiaha. The information gathered from the Pima women in 1910-1911 showed that most of the kiahas in use for the past fifteen years, had been purchased from the Papago either in completed form, or in a finished lace cover, ready to be stretched on a Two women reported that they had made the lace cover themselves, but both had procured the fiber cord from the Papago. No woman was found who had gathered the maguey leaves and made her own cord. Frank Russell. from information gathered in 1901-1902 describes the Pima women as gathering and preparing their maguey leaves, spinning the fiber cord, and fabricating the kiaha of the Papago. It is probable that there were then living elderly women, now gone, who still held to the old practice of maguey gathering and cord-making, but who in the transition had adopted the more beautiful Papago type, like those which neighbors were procuring through trade. Why the Pima began to purchase the Papago kiaha can have but one logical explanation, that of environmental influence. transportation facilities brought about through the introduction of the horse and wagon, made it easier to trade for the kiaha with the Papago, whose material was nearer at hand, than to climb to the distant hills for maguey. The giving up of the old Pima type would naturally follow, and during the transition which preceded this, the copying of the more beautiful Papago kiaha would be an easy matter and a normal sequence.

As rigid materials, together with sinew and thong, have given wrapped weave to both tribes, and fiber plants have provided the lace coil, so still other materials have brought a third technic, foundation coil (Figs. 35 and 59) of the coarse and close varieties (p. 190). The two elements which compose foundation coil, the binder and the foundation, perform different functions in technic building, and thus call for materials with unlike qualities. The exacting element is the binder, a narrow splint-like strip which does the work of uniting the adjacent rounds of the foundation, for this

Russell, F., "The Pima Indians." 26th Ann. Rept. Bur. Ethno., 140-143.

active element must wind about the foundation coils in a tiny spiral catching them together. Stiff materials are impracticable for this, as they crack and break. The foundation element needs less care in its selection, harsher materials may compose it, since it is simply a bunch of splints loosely coiled about the basket as a passive foundation, over which the binding element moves, by first encircling it and then passing through the upper edge of the last round of coiling before taking another turn about the foundation. Thus, one can understand that the close winding spiral demands a flexible material and one of some strength. The shrubs along the banks of the one desert stream, the Santa Cruz, furnish the Papago a little pliable material for the light colored binding element, but throughout the greater part of their land, one material only is supplied the basket maker of coiled ware, the seed pod of the martynia, or devil's claw (Martynia probosidea) which contributes black binding splints for both tribes (see p. 202). In the Pima country, lying to the north and in a region a little less arid, vegetation changes slightly by the addition of a few desert streams, which although dry most of the year, receive sufficient water in the rainy season to sustain along their banks a few willows and cottonwoods, whose young shoots furnish the Pima with material for the light-colored binding element and some to trade with the Papago (see p. 199). Hence, both tribes are supplied with the materials for foundation coiling of the close variety. Materials for the coarse variety of coiling are supplied by each habitat: to the Papago, beargrass (Nolina erumpems), young ocatilla stems (Fouquieria splendens), splints of saguara ribs (Cereus giganteus) and occasionally wheat straw (Triticum vulge) for the foundation element and mesquite (Prosopis veluntina) and other barks for the binding element; to the Pima, wheat straw for the foundation, and willow (Salix nigra) and mesquite (Prosopis veluntina) barks for the binder.

As has been seen the general distribution of certain plants over the entire area has apportioned to both tribes the basketry technics of wrapped weave, foundation coil, and lace coil. A more limited distribution of different plants in the two habitats assigns to each tribe a distinct technic: crude coil to the river villages of the Pima and plaiting to the higher foothill villages of the Papago. In the Pima country the two rivers, the Gila and the Salt, although fluctuating streams and dry most of the year, supply in addition to the cottonwoods and willows, the water shrub arrowbush (*Plucea borealis*, and *Plucea sericea*). This furnishes a type of basketry found in very few parts of the world, as it appears to be solely a desert technic, and to have developed where there is a scant supply of basket material as in southwestern North America. The technic is crude coiling (see p. 172), which constructs the peculiar shaped granaries seen upon many of the houseroofs



or raised platforms (Figs. 29-30). These old nest-shaped structures with overhanging covers are an elementary coiling (Fig. 27), extensively found among the Pima, but wanting, for lack of suitable material, among the Papago. An exception to this was found in two hive-shaped granaries of this technic seen in one Papago village near the Santa Cruz (Fig. 28), where material of this character was obtainable. It seems quite probable that dearth of refined material suitable for the more perfect technics, especially the scarcity of pliable binding elements, must have been largely responsible for the development of crude coiling.

The Papago have sought the heights of their land in preference to the dry valleys since they are dependent upon wells for water which is reached at less depth there than in the valleys. This location gives them access to the thick-stemmed, thick-leaved plants of the higher altitudes: the giant cactus, agave, yucca, and palmea. Of these, one of the most important for basketry is the palmea (Dasylirion Wheeleri), growing on the dry rocky slopes of the higher foothills, four thousand feet above sea level. It is the only plant in the entire region now employed for plaiting sleeping mats, headrings, kiaha mats and headbands (Figs. 11, 19, 20, 75, 80), medicine and trinket baskets (Figs. 26 and 21, see p. 150). It is a plant quite similar in growth to the Spanish bayonet, and bears a long slender leaf of light green, edged with thorns. When cleared of these and split in half, it forms a suitable material for plaiting the mat-like surface of this technic.

All plaiting requires for manufacture bands of flexible material, but its three types demand different degrees of pliability. Checker plaiting needs the most supple, and no material in the region fulfils the requirement; lattice plaiting admits of less pliant strips, but they must be very strong, and no material is present which is sufficiently substantial and yet will bend without breaking. Material for the third type, twilled plaiting, is supplied by the palmea on the higher foothills, and since the Papago are great travelers, the short journey for this material is not troublesome. arrival of civilization, with greater trade facilities, has linked even more closely the habitat and the practice of this technic by limiting plaiting to the few villages nearest the mountains, where each year more and more plaiting is done and less in the lower villages, so that from the Indian women of the higher villages plaited articles can be obtained by the Papago as well as the Pima. Occasionally, to be sure, there is found an old woman in some of the other Papago villages, who prefers to continue the old art and do her own plaiting even if she is put to considerable inconvenience in procuring material. A great many years ago, plaiting was done by the Pima, but owing to the shutting off of the headwaters of their two rivers by the white men, these streams are dry during most of the year, and the one suitable plaiting material, the river plant, Phragmetis communis, which formerly

grew along their banks is no longer found. This river cane was a stiffer and less durable material and much more difficult to manipulate than palmea, so that its use was limited to mattings as it was unsuitable for baskets, or articles not flat. Hence, because of this change which cut off the material, the Pima do not plait as of old, and altered conditions have restricted the technic to the Papago.

The presence throughout the entire area of the three technics: wrapped weaving, foundation coiling, and lace coiling, owing to the general distribution of certain plants has been discussed; as has also the allotment of a distinct technic to each tribe: to the Papago plaiting and to the Pima crude coiling, because of a particular plant material found in each habitat. is still to be considered the influence of the vegetation in each habitat upon a technic common to both tribes, that is foundation coiling, with its two varieties, close and coarse coil (pp. 179 and 190). As has been said, the manufacture of close coil is very greatly hindered by the scarcity of material for the flexible binding element, calling forth interesting economic adaptation of the scant supply. But it is the foundation material that is of interest here, for although it does not need qualities of flexibility, strength, and adaptability to the degree called for by the active binder, its characteristics have a marked influence upon the finished product in qualities of build, texture, and accuracy in technic. The material commonly employed by many tribes for the foundation element of close coiled ware is willow splints, but as a great quantity is consumed by the foundation, this region does not afford a sufficient supply to meet the demand and the scant amount is too precious for an extensive use of it. Therefore, the Papago ordinarily employ beargrass (Nolina erumpems) from the foothills, or occasionally Spanish bayonet (Yucca baccata); and the Pima use cat-tail (Thypha angustifolio Linn.) from along the streams, or less frequently brittle cottonwood splints (Populus fremontii) (see p. 198). The use of unlike materials would obviously affect the finished technic and this is demonstrated by the contrasting qualities which these materials have left upon the close coiling of these tribes, for the harsh beargrass gives to the Papago basket a heavier, stiffer, and firmer construction and to the Pima a lighter, thinner, and more pliable one which is also less durable (see p. 251). From the abundance of martynia and the lack of light-colored binding splints in Papagueria springs another modifying agency, which results in a dominance of black in Papago ware; but even where both dark and light material are present, the greater difficulty in preparing the martynia splints, results in a dominance of light in the Pima ware (see pp. 202 and 250).

As noticeably as is close coiled ware in the two tribes differentiated, because of distinguishing qualities given by the materials, so also are the coarse coiled granaries, since here also unlike materials have left their



imprint upon both the shape and the quality of technic (p. 183). The Pima foundation material is wheat straw, a smooth, even, shapable material; the Papago is beargrass, young ocatilla shoots, or strips of the inner rib of giant cactus which can be split like bamboo, and very occasionally wheat straw, all materials much less pliable and harsher to handle. The Pima binding materials are the bark of willow, mesquite, and other trees; that of the Papago mesquite bark and yucca. The controlling agents here, as in close coil, are the foundation materials, whose qualities are responsible for the dissimilarities. Their influence on form gives to the great globular and bellshaped granaries of the Pima, using the more pliable wheat straw, a shapely contour and beauty of line; and to the barrel shapes of the Papago, using beargrass and other harsh materials, a less symmetrical basket receptacle, with imperfect outline (Figs. 34-35). Influence of material even extends to the quality of technic, since the wheat straw multiple foundation can be more skilfully managed, allowing an evenness to the technic and a precise arrangement of the spiral segments of the binding element which runs in lines from the base to the rim (Figs. 32 and 34). Not so with the Papago granary, the harsh unwieldy materials do not conduce to anything but a rough "hit or miss" setting of the spiral segments of the binding element (Figs. 33 and 35).

WRAPPED WEAVING.

The earliest basketry of this locality, in all probability, is a weaving technic constructed of a series of parallel rods forming the warp, and a uniting weft. The commonest types of weaving, wicker and twined, are, with one minor exception, not present, since there are no suitable materials

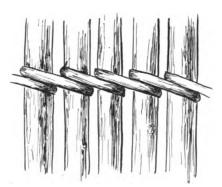


Fig. 1 (50.1-5279). Wrapped Weaving Technic.

for their manufacture. Basketry wicker work, or plain weaving, which finds an almost universal use in coarse openwork structures, and which has perpetuated itself in the loom weaving of the modern power loom, is distinguished from other types of weaving by its interlacing weft. Twined weaving, another substantial technic which is almost, if not quite, as wide-spread in use, and which thus far no machine has succeeded in imitating, is distinguished by its twining weft of two or more strands. The third type of weaving is wrapped weave, a technic found here in two varieties, simple wrapped weave and lattice wrapped weave. The weft of this type does not

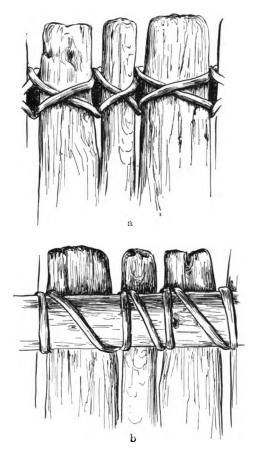


Fig. 2 (50.1-4861ab). Lattice Wrapped Weaving Technic: a, front; b, back.

interlace through the warp strands, as in wicker weaving, neither does it twine about them as in twined weaving, but it wraps about each rod of the parallel warp series (Fig. 1). Lattice wrapped weaving is more complicated and stronger than wrapped weaving, as it employs two series of parallel warps crossing each other at right angles. These are bound together at their point of crossing by a wrapping of the weft strand about them (Fig. 2).

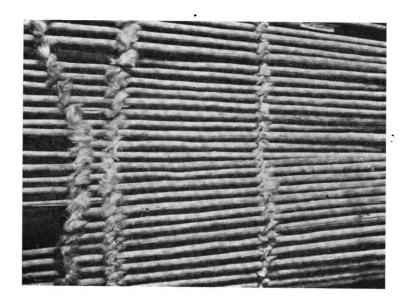
In early days, this interesting old weave, crude as it is, supplied many needs of the Papago and Pima. It furnished large, strong openwork structures such as coops and cages in which to keep live wild fowl caught for food; hanging shelves upon which to suspend animal and vegetable food to protect it from rodents, and the ravenous coyote; doors for the huts and storage sheds; and cradles for the infant. All these are fast disappearing with the influx of civilization, indeed, only four basket doors of simple wrapped weaving were seen in the two dozen villages visited. These pliable doors fold back upon themselves, as the soft weft binder of skin thong which



Fig. 3. Oldest Type of House showing a Door constructed with Rows of Wrapped Weaving.

unites the parallel slats of giant cactus rib constructs a mat-like form which will roll from the two sides (Figs. 3-4). Old oval shaped sieves with a strainer of wrapped weaving, are even more scarce (Fig. 5).

The hanging shelf still finds frequent use, where it is seen suspended from the beam of many of the arbors and storage sheds. It is habitually piled high with all sorts of provisions, baskets, pots, and other things. Civilization seems to have made no change in this shelf of lattice wrapped weave, except that in many instances the material for binding together the warp sticks of cactus rib, or other wood, is of store-bought string, strips of



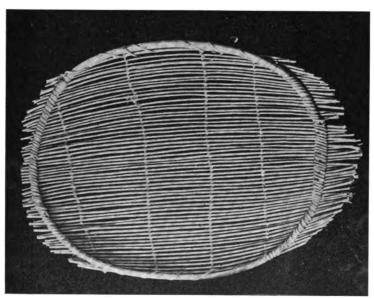
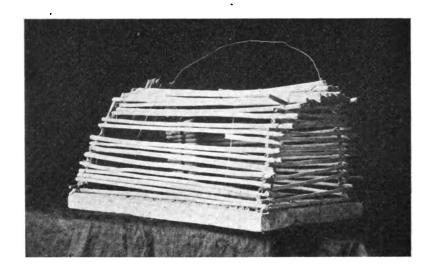


Fig. 4. Detail of Door of Wrapped Weaving shown in Fig. 3.
Fig. 5 (U. S. National Museum). Sieve constructed of Wrapped Weaving.



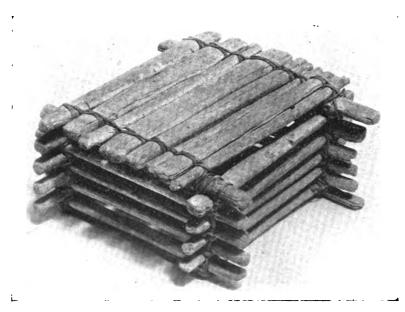
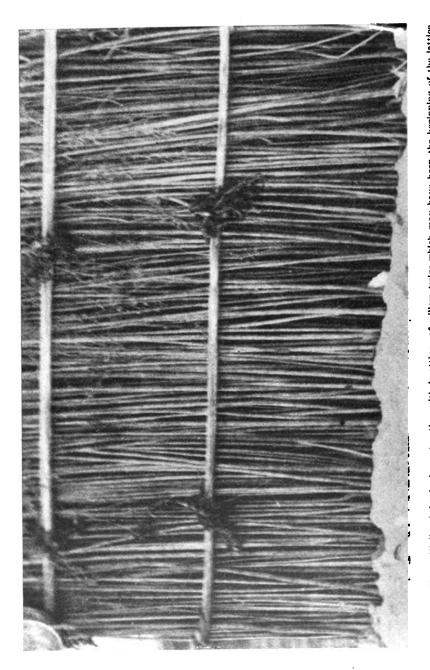


Fig. 6 (U. S. National Museum). Cage constructed of Lattice Wrapped Weaving.
Fig. 7 (50.1-4861). Rectangular Coop of Saguara Ribs and Thong constructed of Lattice Wrapped Weaving.





Fig. 8 $(50.1-5235,\ 4537,\ 4538,\ 4628,\ 4554.\ 5131)$. Pima Hair Brushes. Varieties of wrapping shown ranging from the crudest binding to ornamental weaving in designs.



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cotton cloth, or wire. The coop, or cage, of lattice wrapping is usually rectangular in shape, although at times it is supplied with a rounding top. Sizes as well as materials also vary, although saguara ribs and skin thong are the more usual (Figs. 6-7).

The most common material for the warp element of this weave is the giant cactus (Cereus giganteus), the ribs of whose great fluted columns furnish a straight, light, porous wood, which serves admirably as foundation rods on house doors, cages, and the larger shelves. Another material is arrowbush (Plucea borealis and Plucea sericea), whose larger stems are both straight and uniform in diameter, and which, although of smaller size than the cactus ribs, are suitable for articles where smaller warp rods are needed. The most usual binding elements are thong, the hide cut in strips and slightly twisted; and sinew from the back and legs of deer, split into fine shreds. Cradles are constructed of the mesquite root (*Prosopis veluntina*), saguara ribs, cat's claw (Acacia Greggii) and willow (Salix nigra); with a binding element of sinew, thong, or fine mesquite roots, used while still green. Papago hair brushes are generally of agave fiber (Agave sp.); those of the Pima are of grasses, the tripled awn (Aristida californica), and Sacaton grass (Sporobolus wrightii); of grass roots; of vucca fiber (Yucca baccata), or agave fiber (Agave lechequea).

The crudest form of wrapped weaving occurs on the hair brushes of the locality. The technic is merely a winding and fastening, as the fiber, grasses, or roots are simply bunched together and wrapped toward one end, at times with crude craftsmanship, at others more perfectly (Fig. 8). A more advanced wrapping, sufficiently so to be termed wrapped weaving, is that found on the house doors, sieves, and stirrers (Figs. 3–5). Here the rods and stems of cactus ribs, arrowbush, or other stiff materials, are laid in a parallel series to form warp, and the pliable weft of sinew, or skin thong, is wrapped in a single strand about them. This moves across the parallel series forward over two rods in front, between the rods, backward over one rod behind, and between the rods to the front, to again repeat the process, and so continue until the series of warp rods are all united (Fig. 1). More of such lines placed only close enough to stay the rods complete the surface seen in Figs. 3–5, producing a rough, pliable technic of wrapped weaving, which is widely distributed among peoples of lower culture.

An elementary basket technic enters into the house construction of these tribes, a crude form of lattice wrapped weaving, for a vertical series of parallel slats are crossed by a horizontal series, and knotted together at intervals by a bit of green twig, or of bayonet leaf. Fig. 9 shows a part of the wall of such a brush hut, with its basket-like technic of wrapping. A framework of the trunks and saplings of cottonwood, or willow, is first



erected, whose walls are built of standing stems of ocatilla, or arrowbush, and securely held in place on both the outer and inner surfaces by horizontal slats which cross the vertical stems at short distances apart. The process of uniting the outer and inner horizontal slats to the upright stems is a wrapping and then a tying of the binding twig, or leaf, and differs from basketry lattice wrapped weaving only in this tying. The widely separated joinings in hut construction, because of the distance between, necessitates a breaking of the wrapping movement, which in the closer joints of basketwork is carried in a continuous and unbroken movement from one joint to the next (Fig. 2). The short lengths of the binding twig, or leaf, will answer the purpose in house construction, but a longer element, one of sufficient length to wrap several joints and usually supplied by skin thong, or sinew, is required for lattice wrapped weaving.

The crudest form of lattice wrapped weaving of the Papago and Pima is found on their cradles, a formerly used article, but one which owing to conditions of change has almost disappeared. The almost universal basket cradle of California and the adjoining desert region varies greatly in the different localities as to construction, shape, and decoration, but its technic always holds to some form of weaving, either wicker, twined, or wrapped, each in the region where vegetation is best suited to that construction. The most perfect cradle, both as to shape and technic, is made by the Hupa Indians of northwestern California, a slipper-like shape of twined twigs. Between this perfect form and the simplest is a long series of great variety, the crudest being that of the Tonkawa, Oklahoma, Walapai, Mohave, Papago, and Pima, which consists of a simple frame of rods and slats, bound together with a rough wrapping and double tying, quite similar to Papago and Pima hut construction. It is a technic which hardly can be dignified as basketry, but shows rather an interesting transition between the simple tying process and lattice wrapped weaving (Fig. 10).

The primary use of the cradle was not for transportation, but for putting the infant to sleep when it grew drowsy. Indeed, the child often cried for its cradle and was quiet when strapped in, but was always removed as soon as sound asleep. When employed as a carrier, the cradle frame was either placed on top of the loaded kiaha, or rested horizontally on the mother's head, with its arched hoop to the front for a handle. Older children were never carried in the cradle, but, as now, astride the hip supported by a strip of cloth or a shawl.

The arched hoop, or the foundation of the frame is of willow, cat's claw, or mesquite root, and more frequently of the last. The mesquite tree needs more moisture than other desert vegetation, so that in Papagueria it grows along the dry water courses, sending out its roots to great depth in search

of underground rivulets. In the Pima country it grows along the streams where its long projecting roots hang from the banks, reaching for river water. In the first region one must dig deep for these roots, and in the second trace far back into the bank to reach roots of sufficient size for the cradle frame. Upon bringing it home, the root is immediately skinned by means of the teeth and fingers, and should the skin be slow to yield it is loosened by being held over the fire. It is then cut twice the length of the proposed cradle, heated and arched by placing the foot upon its middle point and bending up the two ends and tied in position until dry, when the bent root retains its arched shape. At times the root is so soft that if taken while still green, it can be shaped without heating. The arched hoop having been prepared, cross bars of giant cactus rib are cut the length of the distance between the

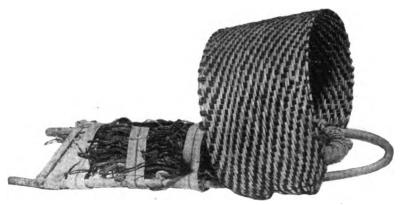


Fig. 10 (50.1-5248ab). Pima Cradle. The frame in this specimen is of crude lattice wrapped weaving, the hood of twilled weaving, the mattress of bark, strapped on by an old suspender of white man's manufacture.

arms of the cradle arch and bound to them with sinew, or thong, in a crude lattice wrapped weaving (Figs. 2 and 10), or attached by a coarse lashing.

The hood, or shade of the cradle, is constructed of splints of willow, or other pliable twigs, which act as the warp; and willow bark which supplies the weft. This interweaves into the split twigs in a twilled weaving of over two, under two, and in a design quite similar to that on mattings (Fig. 10), in zigzag lines, or in graduated squares, as on plaited mats and baskets (Fig. 15b). The Mohave Indians attach feathers and bits of bright flannel to the cradle hood, contrary to the Papago and Pima who leave them undecorated other than the design of the wickerwork. The mattress, to protect the infant from the cross rounds, is of willow bark or wads of cloth. The present-day straps for holding the infant securely to its cradle, are of plaited cloth strips, plain cloth strips, or old suspenders (Fig. 10).

PLAITING.

One of the simplest, as well as one of the most important basketry technics of these tribes is plaiting, which is represented by a single variety, that of twilled plaiting with oblique elements only. The technic here is of equal rank with coiling, as one of the two most utilized, since articles of this construction enter largely into the economy of both the Papago and Pima households. It provides mats upon which to sleep, to eat, and to dry grains, beans, peppers, and other vegetables; headrings, for carrying the olla and the large basket bowl; the headband and back mat for the kiaha; cylindrical baskets for holding trinkets, clothing, and foodstuffs; and rectangular baskets for medicine and magic to drive away the evil spirits.

Mattings from peoples of lower culture in different parts of the world vary in technic, but the most common construction is that of plaiting, either with vertical and horizontal elements, or with oblique elements. Pima and Papago matting, as before mentioned, is of twilled plaiting of the oblique variety, constructed of two series of parallel strips crossing each other at right angles. The strips of both series are of equal width and pliability, and contrary to the weaving technic, both series of elements are active, moving over and under each other with equal ease. Neither is there a definite direction to the technic, as in weaving and coiling, since the elements can plait in any, or in all of the four directions, which the worker may desire. The movement on most of these mattings is in one rhythm or count throughout, each element passing with one move over three and under three elements of the opposite series, with an advance of one element as each new leaf strip is added. The rhythm on the old Pima matting seen in Fig. 12, is an over two under two movement, while other less common arrangements may be noted under matting designs.

Palmea (Dasylirion Wheeleri) is the plant from the rocky foothills which supplies the Papago material for plaiting. Its growth is similar to the Spanish bayonet, with long light green thorny-edged leaves arranged about a thick central stem. The leaf of the palmea is the useful part of the plant for plaiting, and is in perfect condition to be gathered at any time of the year. Its harsh spiny edge makes it difficult to collect, necessitating the use of a stick for breaking off the leaf; so that for the gathering, the women travel afoot armed with long sticks for severing the leaves. When a sufficient number has been secured, they are carried home in bundles on the head, or in the kiaha carrying frame on the back. On reaching their destination, the leaves are first cleared of their thorns with a knife, and then split lengthwise through the center, and spread on the ground to dry.

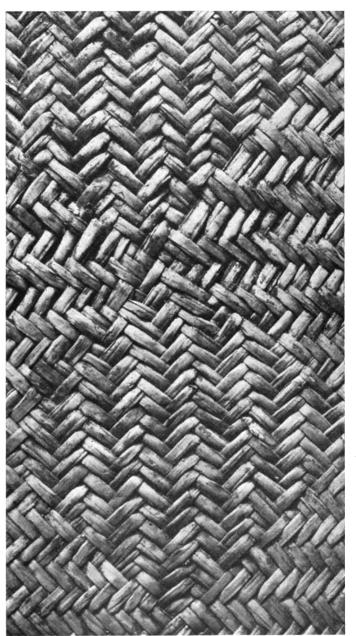


Fig. 11 (50.1-5232). Papago Eating Mat. Two-ply twilled plaiting with a design found only on eating mate and never on sleeping mate.

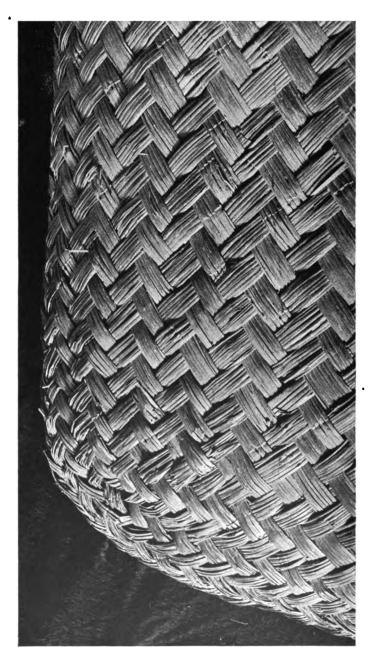


Fig. 12 (50.1-5315). Pima Mat. A rare old specimen since the river grass of which it is plaited no longer grows along the streams.

When needed for plaiting, the dried leaf strips are first buried in a hole in the ground, water poured over them, and then left in the damp earth through the night. By morning, the strips have become slightly dampened throughout and are pliable enough to plait without cracking.

The cane, Phragmetis communis, was the river plant which served the

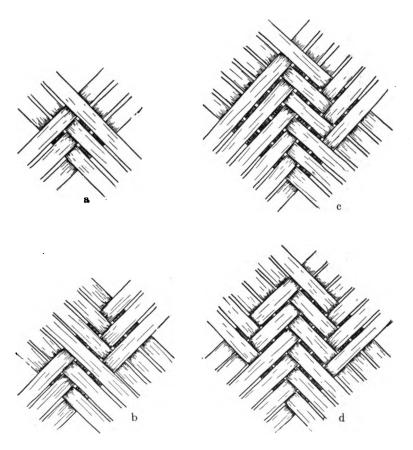


Fig. 13. Method of Mat Plaiting.

Pima for plaiting in times past before the headwaters of their streams were diverted, and the rivers deprived of water. In consequence, *Phragmetis* no longer grows along the rivers, but in former times its hollow stem was found most valuable for the construction of mattings. These plants were cut down with large knives from land near the streams, carried home, and

the stems dried and stored away for future use, but before plaiting the hollow stems were split lengthwise with the thumb nail, and then spread flat.

When the worker is ready to begin plaiting a mat, a few of the dampened leaf strips which have been moistened over night are brought from the pit, but only a few at one time since they dry rapidly in the open air. She then spreads a mat or a square of canvas on the ground upon which to work,

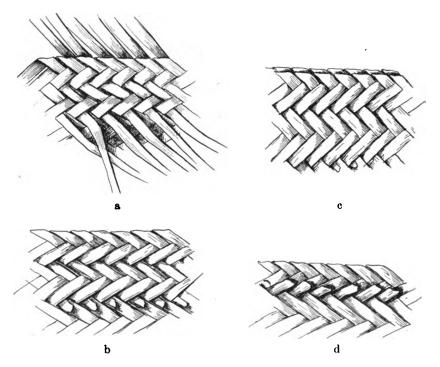


Fig. 14. Edge Making: a, beginning of a double edge; b, inside of completed double edge; c, outside of completed double edge; d, single edge.

and seats herself well to the edge with most of the mat in front of her. Upon this she lays her first six leaf strips in two parallel series of three strips each so that they cross each other at right angles. Each strip of the lower series is then brought up one after the other through the upper series in such a manner as to form three successive steps, as seen in Fig. 13a. The two groups of elements must be held in an oblique position to the worker throughout the plaiting, one series trending diagonally to the upper right, and the other diagonally toward the upper left. She adds new strips only to the

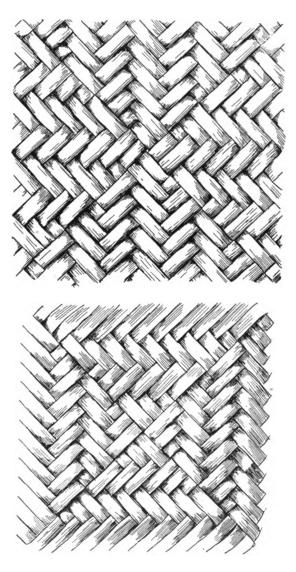


Fig. 15 (50.1-5229, 50.1-5208). Design Units Common in Plaiting, Papago.

farther or upper sides of the mat that they may be more easily crowded toward her for a closely fitting surface, and when more are needed on the near side, she turns the mat around bringing the far sides nearest her, but in every case the elements remain in an oblique position. Three new strips are always added at one time, as in the illustration here, where the first three are laid to the upper right and then plaited in the manner already described (Fig. 13a), by being brought up through the series already in use, to continue the step series already begun (Fig. 13b). Another group of three strips is added to the upper left and so placed as to hold to the plan (Fig. 13c), when they are plaited according to the regular rhythm (Fig. 13d). So the process continues as each set of three strands is added, when the three are When splicing is necessary to lengthen a strand, a new strip is lapped for a few inches over the old strand; and when the inconvenience of reaching the spot where the plaiting is in process is experienced, as the mat grows larger, the worker moves on to the finished portion, and continues plaiting from there.

When the mat has reached the proposed size, it may be finished with either of two edges. The double edge is most common on mattings, and is made by bending one series of parallel elements to the front and downward and interplaiting them into the body plaiting on the front of the mat, and turning the second series to the back and downward and interplaiting them into the body plaiting on the back of the mat. More definitely, each element of the series trending toward the upper right is bent at the edge of the plaiting to the front, and turned obliquely to the lower right, at an angle of ninety degrees, and then interplaited for a short distance into the body plaiting (Fig. 14a), and trimmed off (Fig. 14b). The mat is then turned over, when the second series which trended toward the upper left, now extends toward the upper right. These are bent and interplaited as were the elements of the first series (Fig. 14a), making the finished double edge (Fig. 14c). If during interplaiting, the elements do not slip easily into the plaiting, a sharp stick is used to lift the strands, that those forming the edge may pass under more easily. The single edge is less frequent on mattings than the double. It is made by treating the first series of elements as in double edge making (Fig. 14a, b), and then clipping the second series of elements short at the edge of the mat (Fig. 14d).

Design on twill plaiting is more largely influenced by technic than is the design on any other style of basketry. In its simplest varieties, such as are found here, the design appears to be a result of a play with the material, and this play resolves itself into several rhythmic arrangements. As before mentioned, the regular movement of the technic over three and under three, or over two and under two, is a result of the most economic use of palmea leaf strips and cane stems; but this movement is also of esthetic value as it cuts the surface of the matting into small equal sized rectangular units of design. Different arrangements of these design units give three distinct styles of pattern: an arrangement of parallel bands running in one direction Fig. 12; another of parallel bands perpendicular to each other, part horizontal and part vertical (Fig. 15a); and still a third of parallel bands arranged in squares, a large square composed of smaller graduated squares (Fig. 15b). The grouping of these larger squares is always a vertical or a horizontal one, forming a pattern of squares one above the other, or beside the other.

In addition to the influence of technic on matting design, there is still another, the influence of material. Matting materials in this locality are not strong enough to be serviceable in narrow strips, and wide strips of necessity produce a plaiting which does not admit of many changes in rhythm without weakening the matting. More elaborate twillings, such as those found in the land of the bamboo, are constructed of material which is tough enough to be used in very narrow strands, capable of spanning long stretches of a number of opposing elements, as well as a few, and so allow for great variety in design on a plaiting which also is strong.

Fewer mats are now found on the dirt floors of the one-room Pima hut than formerly, as old customs are fast dying out. The Papago homes, however, are still plentifully furnished with plaited mats of the light green palmea, which turns to a yellowish green with age. At times, the floor is completely covered with them, especially if the family is large, but two or three are quite sufficient for the floor space of the average hut. More frequently one mat only is used, and that is placed either in a corner, or at one end of the hut. These serve mostly as sleeping mats, upon which the blankets are laid at night to lift the sleeper from the dirt floor. In the neater homes, the blankets are folded through the day, thus leaving the mats free as a place to sit. In other huts, the mats are not left on the floor during the day, but rolled up and stood on end in the corner, ready to be unrolled and spread with the blankets when night approaches. The primary use of these mats is for sleeping, but smaller ones are utilized for eating mats (Fig. 11), as is easily recognized by the food spots which stain them. Eating mats serve another purpose during the season for drying foodstuffs, when peppers, beans, corn, or wheat are spread upon them to dry in the sunshine, although the modern square of sacking is at times substituted for this.

In shape, the mats of both tribes are rectangular, either oblong, or square, with rounding corners. The more general oblong form is varied in its proportions to fit the need, but the width is seldom less than half the length. Within some Papago households more than in others, an atmos-

phere of abundance pervades, when the mats take on larger dimensions, even reaching 2.4 m. by 1.3 m. and 2 m. by 1.7 m.; although 1.8 m. by 1.3 m. for the sleeping mat, and 1 m. by 1 m. for the eating mat are more usual sizes.

An additional matting to those which serve for sleeping and eating is the small back mat made for the kiaha carrying frame. This protects the head and shoulders from the heavy load during transportation (Fig. 80a), as it is attached to the front of the kiaha and comes between the woman's back and her load. Its upper corners are tied to the wooden rim of the kiaha, its lower end is secured by the two long poles of the framework, which pass through an opening near the edge. Just above this opening is the spot where the lower ends of the four poles of the kiaha framework cross, making an ugly bunch, which would prove very uncomfortable to the carrier, were it not for the back mat, and the roll of shredded bark, or cloth, slipped in at this point to serve as a padding between the mat and the frame. This padding lifts from the back the hard poles of the frame at their point of crossing, where the load rests most heavily upon the shoulders.

These mats are oblong in shape with oval corners, and have a break, or opening, near the lower edge for the insertion of the two front frame poles which extend some distance below the point of the kiaha. The size of the mat varies in woman's and girl's kiahas to fit the larger and smaller shapes, that of the woman averaging from 60 cm. to 70 cm. in length and from 24 cm. to 28 cm. in width, since it must fit in length, the distance between the rim of the kiaha and its point; and in width, the space between the two poles half way down from the rim, or the point where the headband is attached. The material for the back mat, like that for matting, is the dried leaf strips of the palmea, whose gathering and preparation was previously described. The technic is plaiting of the twilled type, with diagonal elements, and as in larger mattings it is of three varieties of twilled plaiting in over three and under three rhythm, arranged in bands of vertical parallels; in combined bands of vertical and horizontal parallels; and in squares composed of smaller squares. The edge like that on large mattings is of the double type, whose method of making has already been given.

Plaiting supplies the kiaha with another essential part, the headband, or the support for the carrying basket. This is a narrow double band which passes over the head to hold the load securely on the back and shoulders of the carrier. In reality, it is a long narrow mat with its ends joined to form a ring, and then flattened into a double band about 7 cm. wide and 35 cm. long. It is very short, but a rope extension lengthens it, and attaches it to the kiaha at its two ends by passing in a double line under the front poles of the kiaha frame, then down and around the four crossed poles below the kiaha point. The process of making the headband will be described later.

Aside from flat mattings the Papago plait cylindrical and rectangular forms, one of which is the circular headring, Nothing is more helpful to the Indian woman for carrying loads on the head than this small ring about 4 cm. or 5 cm. in diameter, since she must bring from the village well all the water for washing, cooking, and drinking; from the neighboring fields, grains, beans, peppers, squashes, and other vegetables; and from the distant foothills the favorite cactus fruit. She carries these at times in the kiaha on her back, but quite frequently on the head, the water in an earthen olla, or the more modern rectangular three gallon varnish can, and the foodstuffs in a basket bowl. When carrying these loads, she places the little headring on the crown of the head, and the load on top of it, for it acts as a soft pad between the load and the head, and also steadies the basket, or olla, if it have a curved base. A woman so laden is a pretty sight as she steps along with easy gait and erect carriage, balancing, without the aid of her hands, the great weight upon her well-poised head, for it is this practice of transporting burdens upon the head which has given her that grace of bearing which well befits a queen.

The basket headring, like matting, is a twilled plaiting of palmea (Dasylerion Wheeleri) leaf strips, but the rhythm of the plaiting never varies from a regular over two and under two movement. Its beginning is a small mat made on the ground with two series of equal width leaf strips placed diagonally in front of the worker. In starting the headring the two series of three strips each, are laid so as to cross each other at right angles near their central point, when the three strips of the lower series are brought up through the upper series as in beginning the sleeping mat (Fig. 16a). The next move in ring plaiting, however, does not proceed as in mat making, for at this stage the edge finish is begun. For this, the upper end of the lower left-hand strip is bent toward the upper right at an angle of ninety degrees and lies just above the upper left-hand strip (Fig. 16b). Three new elements are then added on the upper right, and so placed as to hold to the regular step series of the beginning (Fig. 16c). These are then plaited in regular rhythm. over two and under two (Fig. 16d), when the three are bent to the upper right at an angle of ninety degrees and plaited into the opposing strips (Fig. 16e). This process continues until the finished edge of the mat is the length of the proposed circumference of the completed ring.

When the little mat has reached this stage (Fig. 17), the woman lifts it into her lap and bends it into ring shape, so that the loose ends at the right and left of the finished edge come together. These ends are then plaited to form a cylindrical shape (Fig. 18). The plaiting then continues upward until the cylinder is about three times the proposed height of the finished ring, when each strip of the series of elements trending toward the upper right



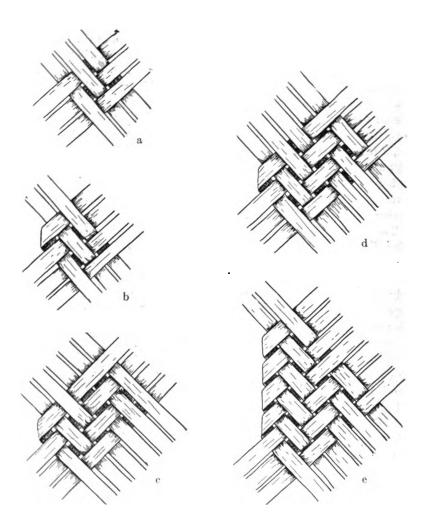


Fig. 16. Method of Plaiting the Headring.

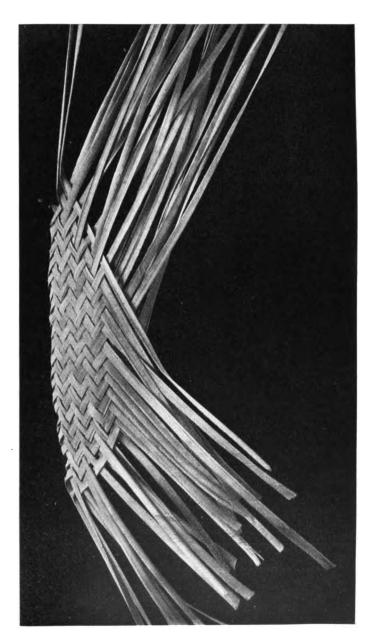


Fig. 17 (50.1-5147). Plaited Beginning of Headring ready to shape into Cylindrical Form.

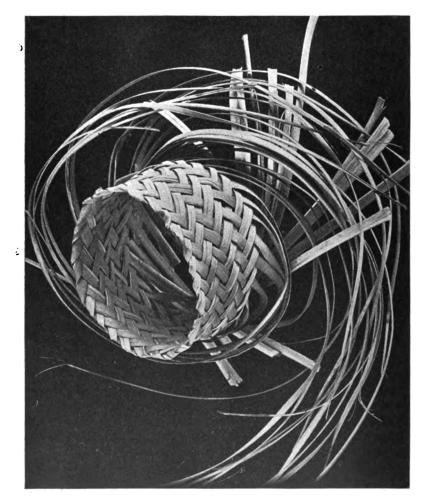


Fig. 18 (50.1-5224). Further Plaiting on Cylindrical Form.

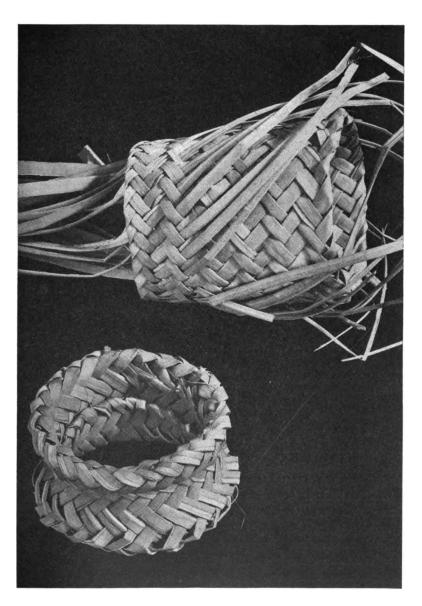


Fig. 19 (50.1-5225, 5226). a, Cylindrical Form completed, ready for trimming off Ends; b, Completed Headring made by folding the Cylindrical Form.

is bent at right angles and plaited into the body plaiting (Fig. 19a, Fig. 14a) and then trimmed off (Fig. 14b); while the second series of elements, those trending toward the upper left, are cut short at the upper edge (Fig. 14d). The work is still damp enough to fold without cracking into the finished ring, which is done by creasing the tall cylindrical shape into three overlapping folds. A thin leaf strip is then either tied about the middle of the ring or bound about its edges to hold it in shape when heavy loads are carried (Fig. 19b).

The material for making the kiaha headband, already mentioned, is palmea (Dasylerion Wheeleri), the usual plaiting material of the Papago; the technic employed is twilled plaiting in rhythm of over two and under two. It is begun as the headring (Fig. 16), but with nine or ten strips only, since this number is sufficient for the narrow width of the band, as they are bent back and forth, in plaiting from edge to edge (Fig. 20). More defi-

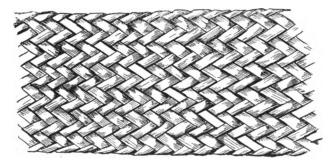


Fig. 20 (50.1-5230). Detail of Kiaha Headband.

nitely, after completing the interlacing, as in making the headring, the plaiting continues toward the right until the desired width is attained. Each strip trending toward the upper right is then bent toward the upper left at an angle of ninety degrees, thus forming an edge on the right, similar to the edge on the left, for like a braid, the two edges are finished with the plaiting of the strips diagonally back and forth across the band as the work progresses. When it has reached twice the proposed length of the finished band, its ends are brought together in ring shape and joined by interplaiting as in the headring (Fig. 18). This ring folded flat is the completed headband, which is attached to the kiaha, as above described.

Cylindrical and rectangular basket shapes are also plaited by the Papago, although for light use only, since they are not particularly substantial. Palmea leaf strips make a basket of more or less irregularity of outline and one so quickly and easily plaited that it is not so highly prized as is the more

perfect and laboriously made coiled ware. Plaited baskets serve two functions, both utilitarian: one, to meet a domestic need in general household affairs; the second, to serve as a case to enclose ceremonial objects. Household baskets contain trinkets, sewing articles, clothing, grain, fine seeds, and various odds and ends, ceremonial baskets enclose the numerous medicines of the medicineman or woman, for doctoring the sick and regulating the weather, besides holding the little bags of paint employed in decorating the face and body at ceremonial dances.

The two distinct uses of plaited baskets call for special shapes to fit the dissimilarity in contents, so that baskets for household use are cylindrical in form on a square base, with at times a square-topped overlapping cover (Fig. 21). Although in general outline the baskets hold to the cylindrical form, they often vary slightly from the true cylinder by a gradual drawing in towards the rim (Fig. 21), or this contraction may be followed by an outward curve at the immediate edge (Figs. 22 and 24). The shapes vary considerably in proportion as some are of greater width than height, others of greater height than width, and still others are of equal proportion (Fig. 21). The sizes also cover quite a range, as the dimensions vary from 11 cm. to 40 cm.

The technic is twill plaiting in the rhythm of over three under three, and so constructed as to form parallel bands arranged horizontally, vertically, and in graduated squares (see matting design). The bases are of two styles: (a) the more usual, broken by parallel lines of equal width arranged in graduated squares (Figs. 15b and 23); and (b) the less common cut through the center by a vertical cross (Figs. 15a and 24). The walls of the baskets with base (a) are so constructed that the plaiting results in parallel bands arranged horizontally encircling the basket (Figs. 22); while those with base (b) are so plaited as to result in parallel bands running vertically, although often these vertical bands do not extend to the rim of the basket, but are broken by horizontal lines (Fig. 21). When the base is completed and the wall is to be begun, no additional strips are added, but instead the adjacent strips at each corner are drawn close together and plaited into each other (Fig. 25). The basket edges are all single, as described under mattings. An extra bit of ornament is occasionally constructed with the edge elements, as in Fig. 24, which after having been plaited into the body plaiting are not cut short, as is the usual custom, but turned diagonally toward the upper left and caught under the plaiting.

For ceremonial purposes, the Papago make use of the trunk-shaped basket with a deep overlapping cover, for in this little trunk they place the medicines, paints, etc. It is made particularly for this function, and all the medicine baskets seen on the expedition had been made by the wives,





Fig. 21 (50.1-5278). Plaited Basket with Cover, Pima.

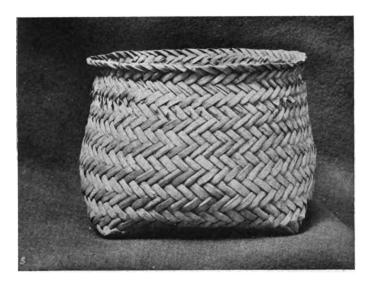


Fig. 22 (50.1-5118). Open Plaited Basket, Papago.

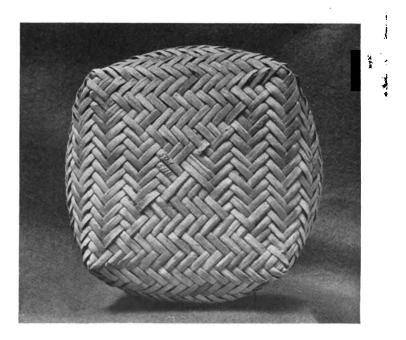


Fig. 23 (50.1-5118). Base of Open Plaited Basket shown in Fig. 22.

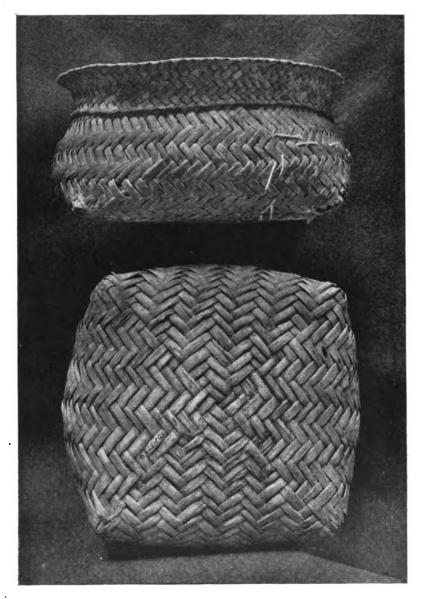


Fig. 24 (50.1-5229). Open Plaited Basket and Base, Papago.

or the mothers of the medicinemen; or by the medicine women themselves. Information was not obtained as to whether other people were allowed to make them, or whether the construction was conducted under different conditions than those during the making of an ordinary household basket. From the oblong base are erected vertical walls for the body; while from a slightly larger oblong top are dropped vertical walls about two-thirds the height of the basket, for a cover. This ample overlapping cover is usually tightly tied on with a string about the center, which tends to give a sag to the middle after short use (Fig. 26). These trunks vary in proportion, some are long and slender, others are short and broad, but their ends in most cases approximate a square. The sizes run from 13 cm. to 86 cm. in length; 7 cm. to 15 cm. in height; and 4 cm. to 21 cm. in depth.

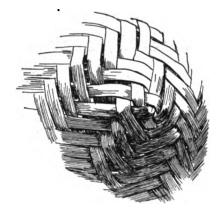


Fig. 25 (50.1-5228). Method of Plaiting Basket Corner.

The technic of the base is twilled plaiting in parallel bands of over three and under three rhythm; the walls are in encircling horizontal bands of the same rhythm; and the cover is like the body of the basket turned upside down. Very occasionally the base and the top of the cover are so plaited as to form two or three squares placed side by side, each enclosing smaller graduated forms of the same shape, such as that in Fig. 15b. The manipulation of the strips to form the corners is the same as when making the corners of the cylindrical household basket, and the finish of the basket is the single edge.

The Museum secured on the expedition six medicine baskets belonging to medicinemen and women of four Papago villages. To these men and women are entrusted the welfare of each particular village, for the Papago believe in their supernatural power to disperse evil spirits which have entered

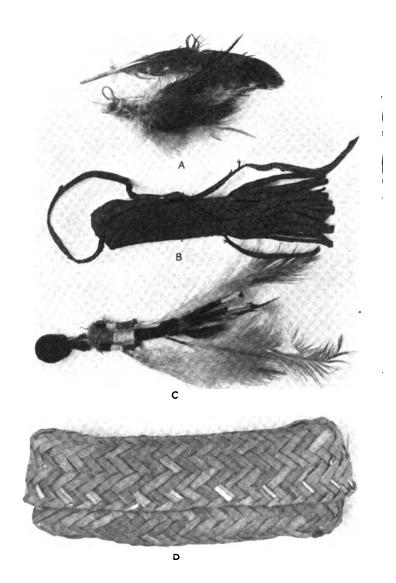


Fig. 26 (50.1-5165). Medicine Basket containing a Little Effigy used to prevent Attacks by the Apache.

into people and caused sickness, and into natural phenomena and caused disturbances; and also that aided by articles of magic, such as are found in these medicine baskets, together with proper ceremonials, the medicinemen and women have the power to avert all evils and invoke all prosperity.

A medicineman's rain-basket with its contents was obtained from the village of Covered Wells. In it are (a) turkey feathers which, with proper chants, bring rain; (b) three sticks of a long stemmed bush with stickers, such as cat's claw, each representing a year the medicineman has practised, and which, with prayer chants, cause rain and also cure rheumatism; (c) a stem of the shrub ash tree with an attached buzzard feather, for emergency cases when there is great need for rain and the preceding charms have proved ineffectual; (d) chicken-hawk feathers, which, when all previous attempts to produce rain have failed, serve as a desperate call for rain for the village, and water and food for the children; (e) deer tail, a cure for headache and also for fever; and (f) extra feathers.

A medicine woman's rain basket was obtained at Little Tucson, for although ceremonial curing is more generally practised by men, there are also medicine women. The contents include (a) feathers for painting the body on ceremonial occasions; (b) three rain-sticks, indicating the woman had been a medicine woman three years, and which with incantations and rhythmic beatings upon the basket drum give rain; (c) a stick with eagle feather, to call forth rain; (d) a tail for curing human illness; and (e) extra loose feathers.

Fig. 26 represents a medicine basket obtained from the medicineman at Santa Rosa village. It contains the magic to protect the Papago from the Apache whom they feared greatly: (a) a little Apache effigy with head of wax and body of string and eagle feathers; (b) a small skin bag with fringed edge, in which to encase the effigy when not in use; and (c) some additional loose feathers.

Another medicine basket was procured from the medicine woman of Little Tucson, from whom the rain basket described above was also obtained. The purpose of its medicine is for protecting an infant from being appropriated by evil spirits, for when (a) the bits of white clay, done up in the small cotton rag, are unwrapped, ground in (b) the shell, and given to the infant, the evil spirits will flee. The powdered clay is administered when the child is about three days old, and at the same time some of it is given to the parents as well. This white clay is also dispensed to young girls as efficacious in protecting them and dispersing all evil spirits. Within the basket is another very small empty one, with no other significance than that it was the first medicine basket this medicine woman made.

A medicineman's basket from San Xavier contains a turtle shell, which

has been converted into a rattle. The magic of this charm had served three generations of medicinemen, for it had been used by the grandfather, and in turn the father of the medicineman from whom it was procured. The turtle had been secured by the grandfather, who cut off its head and legs, and left the shell for ants to clear, before converting it into a rattle. Its efficacy lies in its power over sickness caused by the turtle, such as rheumatism and diseases of old age.

A medicine basket also from San Xavier, although the basket, or the case for the medicine, was not made there but in Santa Rosa, contains owl feathers which have the mastery over certain secret forces in nature, more particularly in this case over sickness and distress due to the owl, the chief among which is fever.

CRUDE COILING.

Another very simple technic found among the Pima is styled crude coil, since it is the crudest type of coiling in existence. Like all ware of this technic it is built spirally, and like foundation coil, it has a foundation element which is united into a solid structure. But the unique thing is that the customary two elements, a foundation and a uniting agent, which are the usual components of foundation coiling, are here merged in one element which performs the work of both. This single member acts as a solid foundation spiral, and also unites its own adjacent segments (Fig. 27). The constituent parts of this one element are twigs of some size, which are added singly and in their natural state still bearing smaller twigs and leaves. The two ends of the twig accomplish the uniting, or binding process, for their stem end clutches into the foundation of the last round of coiling, and the slender leaf end secures itself by winding about the previous twig. A stem end is first inserted on the outside of the previous segment of coiling, and a second stem end is thrust in on the inside a short distance beyond where the first twig entered the previous coil. The continuation of this simple process of inserting one stem on the outside, and the next on the inside, and in each instance winding the leaf end about the previous twig completes this one-element coiled technic.

Besides disagreeing with other coiling of these people in the number of elements which it employs, crude coil also differs in the direction of the movement of the technic. Coiling with two elements advances from right to left, or in a counter-clockwise direction. This would be awkward in crude coiling so we find the technic moving from left to right, or clockwise, as is natural with people who are right-handed. The left hand holds securely the work already completed while the right is free to do the in-

serting of the stem ends and the winding of the leaf ends (Fig. 27). Simple as is the process of constructing crude coil, far from simple is the appearance of the finished technic. One can easily see by Fig. 28, how completely obliterated in a crude mass of twig stems is the actual process. Solving the enigma of its construction from the complicated surface of the finished technic is impossible, for when the leaves have dried and dropped, the tangle of woody stems seem to have grown into this mass. Only after watching an Indian making the coil, or by tearing the technic apart, is its process discernible. So complex is its appearance that one ethnologist, in recording its existence among neighboring desert tribes, thus speaks of baskets constructed with this technic: "These granaries can be called baskets only by courtesy, as they show no distinct weave." 1 Dr. Barrows, however, has looked deeper into its construction in baskets from the Coahuilla, and calls it "a coiled technic of twisted osier withes." 2

Granaries of crude coiling seem to have had quite a distribution along the streams of this desert quarter before white men disturbed the culture of the red men. They have been found in the cliff-dwelling caves of southwestern Colorado, and are used today upon the roof by the Pima and Cocopa, upon platforms by the Pima and Mohave, Coahuilla; and upon the ground by the Papago, in the few instances found. The forms of these granaries vary but slightly, except in the hive shapes of the Papago, since they hold to the cylindrical as with the Mohave; or to the cylindrical with a spreading toward the base as with the Coahuilla; or to the cylindrical with a spreading toward the top as with the Pima.

These great nest-shaped structures, roofed with overhanging twigs, perched upon many of the hut roofs are a novel sight to the traveler as he enters a Pima village (Fig. 29b), although very occasionally as already said, they are on raised platforms (Fig. 30). These structures, not only resemble a huge nest in form, but also in texture, for they seem put together much as a bird builds a nest; in reality they are immense baskets, termed caches, and constructed of the coiling previously described, the crudest coiled basketry now known. They are baskets for storage, for the preservation of the crops of wheat and corn, as well as mesquite beans in the pod. To reach the granaries on the roof a ladder must be used, and it stands ready at all times against the wall of the hut. The women must climb this ladder each time the family needs a fresh supply of grain or beans and also in time of harvest,

¹ Kroeber, A. L., "Ethnography of the Coahuilla Indians," University of California Pub., Vol. 8, No. 2, June 1908, 42, 43.

¹ "Ethno-Botany of the Coahuilla Indians of Southern California," University of Chicago Press, Chicago, 1900, 52, 53.

Barrows, ibid., 52, 53.

⁴ Kroeber, ibid., 42, 43.

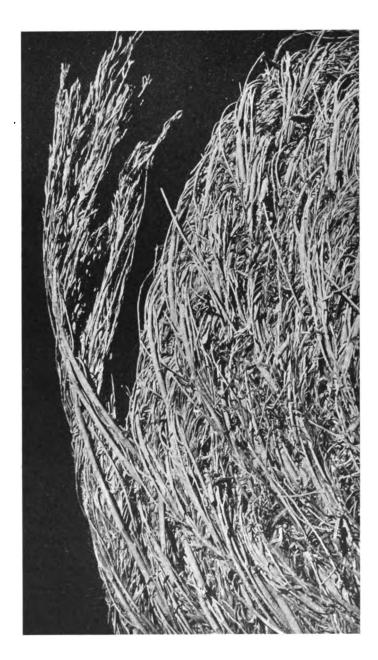




Fig. 28. Papago Granary of Crude Coiling, (United States National Museum photograph).



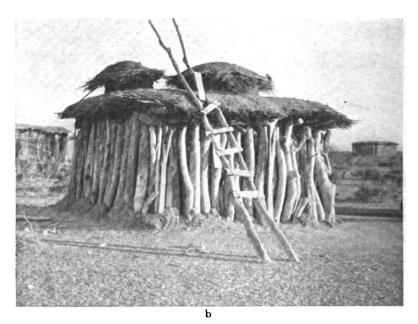


Fig. 29. $\it a$ Old-time Ladder for filling Pima Granary on House Top; $\it b$, Storage House with Two Granaries and Modern Ladder.

when the winter's supply is hoisted to these granaries for storage upon the hut roof. Present-day ladders have the two upright beams of small cotton-wood trunks, with rounds, or slats, of cactus rib, (Fig. 29b). Old ladders, numerous throughout the Southwest in years gone by, but seldom met with now, are of a large cottonwood tree trunk, notched for steps (Fig. 29a).

For making this rustic technic, the Pima and Papago find growing along the few streams of their arid land the slender, pliable, but not very durable arrowbush, *Plucea borealis*. Its stems in olden days furnished the wood for



Fig. 30. Granaries on Platforms.

arrows, and at the present time builds the hut of the Pima as well as this basket granary of crude coiling. For this purpose the stem of the arrowbush is broken near the ground and used immediately while still fresh and pliant. Since that section of Papagueria which is in Arizona has but one river, arrowbush is not as plentiful as with the Pima, so crude coil is very little practised, and when it is, another similar material, likewise termed "shamt" is frequently employed. For the same technic the Coahuilla use willow, the Mohave arrowbush.

¹ Barrows, ibid., 52.

² Pacific railroad survey itinerary, p. 115.

The Pima storage bin is built without a base for the roof, or platform, upon which it rests usually serves this purpose, although a layer of arrowbush is frequently spread on the spot where it is to stand. The granary is covered with a roof, slightly raised in low cone shape at the center and gently sloping to the overhanging rim. Like the body, its roof is of arrowbush twigs, but so placed as to radiate from the center, and these are laid upon a square of cloth, or a piece of old grain basket of coarse coiling, to keep the contents free from dropping leaves of the arrowbush, and the dirt which is piled loosely on top of the granary cover. Granaries vary considerably in size, but the average height is from 40 cm. to 50 cm., and the diameter about 1 m.

The Pima nest-shaped storage basket is not used by the Papago. The very few granaries of crude coiling made by them are shaped like a hive, or a barrel with incurving top (Fig. 28). Its base is usually a coiling of finer material: willow, cottonwood, or more frequently beargrass, since arrowbush is too stiff a material to work into the close rounds of the circular base. The Papago barrel-shaped bin is never found on the hut roof, but stands on a few boards, or stones, to lift it from the ground; neither is it roofed over, but its opening is covered with an old tray basket, or a piece of canvas. At times, it reaches the height of a man's shoulder, but more usually is slightly lower. As these baskets for storage are always found out-of-doors, and never within the hut or the storage shed, they must weather the climate, which in this region, however, is not a severe one except for heat, wind, and dirt. Even with these conditions some granaries will last two years, but it seems a more frequent custom to construct a new one each twelve months, and this is not a laborious task as one can be easily made in a day.

For constructing crude coil, no tools are required further than something for cutting down the material. As before stated, the Pima granary is without base, so that the first coil of the wall will be the beginning of the granary. This is started by making a bundle of twigs about half the size of a man's wrist into a ring, with a diameter equal to that of the proposed base. The bunch of twigs forming the ring are bound over and over with a slender twig, for to this ring will be attached the first row of coiling, since into it the stem ends of the twigs are inserted. First the stem end of a twig is thrust into the outside of the ring in such a manner that the stem will follow the top edge of the ring, with its leaf end pointing toward the right. The stem end of a second twig is then thrust into the ring on the inside about two inches to the right of where the first stem end entered the beginning ring, with its leaf end pointing to the right as before, when it is wrapped about the first twig. The stem end of a third twig is then thrust on the outside of the beginning ring, two inches to the right of the point where

the second twig entered the beginning ring. The leaf end of this twig points to the right, and wraps about the first and second twigs which by this time make a coil of some size. The stem end of the fourth twig is pushed into the beginning ring on the inside and its leaf end wrapped about the previously twisted twigs (Fig. 27). So the process continues until there remains no more space on the beginning ring for the insertion of more twig ends, when the first row of coiling just completed must serve as a ring for the insertion of new twigs. The stem ends are pushed into this as before, alternating first one on the outside and then another on the inside; and this continues round after round, until the granary wall has reached the proposed height, when as a finish the last leaf end is bound with a twig, or string, to the previous row of coiling.

COARSE COILING.

A great step in advance over the last unique coiling of one element with a double function, is another more general type of foundation coil which is practised by both Papago and Pima. It is a coarse coil with two members: a foundation element, or passive spiral; and a binding element, or active spiral which unites the segments of the passive foundation (Figs. 31 to 33).

The direction in the movement of the technic, that of the foundation and its accompanying binder, differs from crude coil, since it moves toward the left, or counter-clockwise. This is the natural movement for coiling of two elements with multiple foundation, for right-handed people, since the left hand supplies fresh material for the foundation, and also holds it in place while the right manipulates the binding element by passing it toward the left over the already prepared foundation. Both tribes work baskets from the outside, as well as from the inside, depending entirely upon which surface they wish to give the smoother finish, so that before determining the direction of a technic it is necessary to find the right side of the technic.

In addition to the general movement of both foundation and binder in the large spiral about the basket, the binding element has a secondary movement which unites the adjacent rounds of the technic by means of a smaller spiral. This smaller secondary spiral moves about the foundation coil in process and punctures the upper edge of the foundation coil in the previous round, binding the round in process securely to it. The style of this smaller spiral designates the particular type of coiling, which in this case is a plain spiral and not twisted, interlaced, or looped as in other types; so the technic is termed spiral coiling (Figs. 31-35). The segments of the



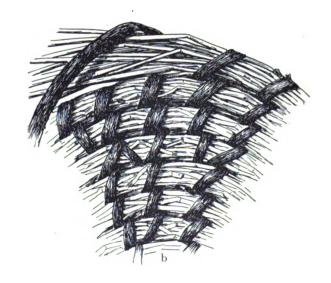
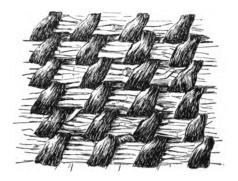


Fig. 31 (50.1-5274, 5275). Coarse Coiling, Pima: a, beginning; b, base.



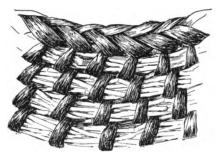


Fig. 32 (50.1–5276). Pima Coarse Coiling showing Side Wall and Edge.

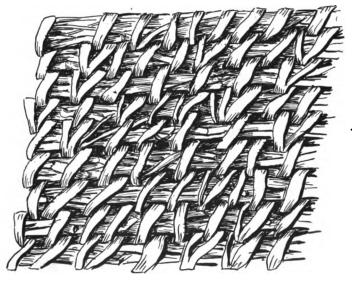


Fig. 33 (50.1-5192a). Papago Coarse Coiling.

binder are not placed in juxtaposition to each other in this coarse coil, but are spread apart in a distended spiral, thus allowing the foundation to show between, and resulting in a more open texture than that of smaller baskets, which are constructed of finer materials, and for this reason it is commonly termed "open coiling." In coiled basketry the foundation element may also show a diversity in composition, which, however, is of minor significance as belonging to an inner member and so receives the last consideration. Here it is composed of a number of splints and in consequence is called "multiple foundation" (Figs. 31-35).

Coarse coil constructs a second style of granary, but one which is not found on the house roofs and outside platforms, as are the nest and barrel shapes of crude coiling, for this storage bin is not exposed to the weather but kept indoors; when families are poor, it is placed in a corner of the hut, but if they are more prosperous, it is housed in the storage shed. crude granary, it stores wheat and corn, and in addition may hold fine seeds, and shelled beans of several varieties. The Indians are loath to part with either of their storage baskets, for within them much of the family food supply is deposited, when nature has ceased for a season to yield the fresh foods (Figs. 30, 35). If the year has not been an exceptionally dry one, a Papago or Pima storage shed after the harvest season has past is an enviable sight. On its walls are basket materials, martynia, willow bark, willow splints: standing in a corner are beargrass, cat-tail, wheat straw; from beam to beam hang peppers, red and green; while on the ground are squashes, gourds, and great basket granaries full and running over with grains, beans, and various seeds. All these assure comfort to the family during the season when nothing is supplied by the fields. The preservation of the smaller foods required suitable receptacles, and these coiled granaries have supplied this need and so are greatly prized.

In outward appearance this second storage bin differs greatly from the crude type with its loose ragged structure described above, for here the walls are more substantially built. Just how long it will last before falling to pieces, depends upon the place it is kept, the care it receives during use, and the excellence in workmanship when constructed. Some storehouses are crudely built, open to the dust and dirt blown in by desert winds; some Indians are heedless in handling and filling their storage baskets, and others careless in the compactness of its construction, for at times the binding element is loosely coiled, with great spaces left between the segments of the binding spiral. However, the bin commonly has enduring resistance for about eight or ten years of continuous service.

This is not an uncommon storage basket among peoples of lower culture. Similar baskets, both in shape and technic, are found in many parts of Africa

and a number of localities in America. The largest bins of the Papago and the Pima correspond in being globular in form; but the smaller bins differ, as the Pima are bell-shaped, with a flat base and obliquely straighter wall (Fig. 34), and the Papago barrel-shaped, with a smaller base and more rounding wall (Fig. 35). These bins are covered with a lid especially made for them, or with an old basket bottom of finer coiled ware. After they are filled these lids are sealed with mud; in fact, the whole bin may be completely covered.

There is great variety in the size of both Papago and Pima shapes, averaging from $\frac{1}{2}$ to $1\frac{1}{2}$ meters in height, but in the large spherical bins of both tribes they reach 2 meters in height and about the same diameter. These great globular granaries must be constructed within the hut or storage shed where they remain, since they are too bulky to pass through the door, or storage house opening after being made. They are also too large to be constructed by the usual method from the outside, but must be made from within, when the worker gets into the basket as seen in Fig. 39.

The materials for coarse coil differ in the two tribes: the Pima foundation is wheat straw (Triticum vulge); and the Papago beargrass (Nolina erumpems), wheat straw and ocatillo (Fouquieria splendens). The Pima binding materials are barks of the willow (Salix nigra), mesquite (Prosopis veluntina), Acacia constricta, and a few other trees; those of the Papago are leaves of sotol (Yucca elata) and mesquite bark. Wheat straw is procured from the fields after the harvest and needs no preparation. Beargrass is gathered from the foothills in summer, its method of collection and preparation are fully described in the chapter on close coil. Willow bark, mesquite bark, and other barks are stripped from the standing tree, and only a little is removed from each, that the loss of the bark may not injure the tree's growth. Bark must be used while still green, or if allowed to dry after cutting, it must be well soaked before it is pliable enough for use. Sotol is found on the upper mesas, its process of gathering and preparation will be found under close soil (p. 190).

Like all basket work of the Papago and Pima with the exception of cradle-making, these bins are constructed by the women; and as in all foundation coiling they are aided in their construction by two tools, a large butcher knife, or other strong blade, and an awl. This last is made of hard wood, either Sarcobatus vermicularis, or Acaca constricta, and whittled into shape by the women. The difference in general appearance of the Papago and Pima baskets of this type (Figs. 34-35), comes from two causes: a difference in material, and also one of care in setting the segments of the binding spiral (Figs. 32-33). The Papago foundation materials are rough and uneven, and equally so are the binding materials, while the Pima



foundation of wheat straw and the binder of willow bark are more manageable. This in addition to greater care in making, gives a Pima bin which is more perfect in outline, more solid in build, with the rounds of coiling more evenly and smoothly bound (Fig. 34, Figs. 31-32).

The coarse coiled granary is usually not made until emergency calls for it, when as the illustrations of a Pima at work show, the woman supplies this need. She selects a bunch of wheat straw about the size of a man's thumb, and wraps it with a strip of bark for about 4 inches (Fig. 36a), when



Fig. 34 (50.1-5276). Pima Granary of Coarse Coiling.

the wrapped bunch is bent to form a small ring, or circle, for the center of the base of the granary (Fig. 36b), and the binding element passed through the center of the circle a couple of times (Fig. 37a), to bind the ring securely (Figs. 31a, 37b). Regular coiling now begins by passing the foundation coil around and around this small circular beginning, while its accompanying binding element wraps about the round of foundation coil in process and

catches into the top edge of the coil below (Fig. 31b), through the hole already pierced by the wooden awl (Fig. 38ab).

This continues until the base is the desired size, when the new round of coiling is so placed as to start the wall of the basket upward. The position of the new round of coiling in relation to the base, decides the prospective

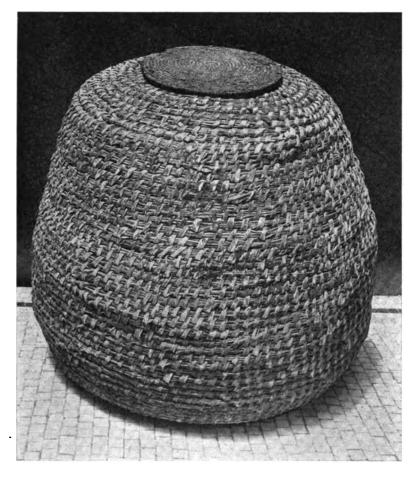


Fig. 35 (50.1-5192). Papago Granary of Coarse Coiling.

curve of the wall, for in the setting of each new foundation round of the wall, lies the secret of shaping the outline of the basket, since it determines whether the form is to be globular, barrel, or bell-shaped. So without decoration, other than a braiding of the binding element on the final round





Fig. 36. Pima Basket Maker beginning Coarse Colling: a, wrapping the foundation element; b, shaping the center ring to which the first coll is bound.





Fig. 37. Pima Basket Maker: a, binding the center ring; b, center ring completed.





Fig. 38. Pima Basket Maker: a, showing use of large wooden awl; b, pushing through the binding element.

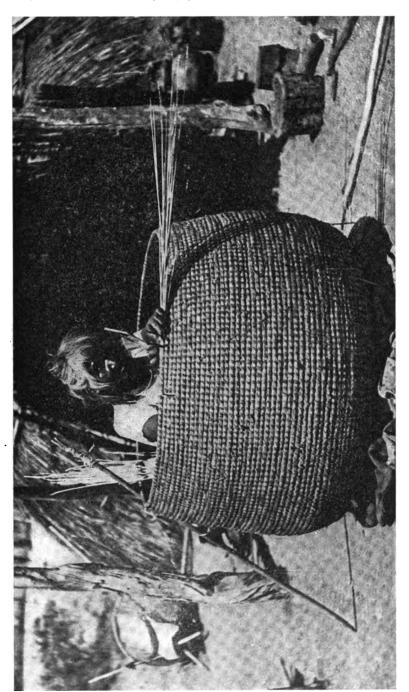


Fig. 39. Pima Basket Maker completing a Large Granary. (Photograph by Putnam and Valentine, Los Angeles, Cal.)

of the foundation coil (Fig. 32a), whose purpose, in reality, is as much to give strength to the edge as to decorate, the granary is completed, and its beauty consists entirely in careful shaping and evenness of construction. At times, these bins are built with a double foundation coil, that is, two coils are placed one above the other and bound on together. While this method completes a basket more quickly, it produces a structure far less firm and strong, so that the single foundation coil is more frequently resorted to.

CLOSE COILING.

The best known basketry of these tribes is close coil, with conventional fret designs in black. It is a more perfect coiling than the last, with its thick foundation and binder of spreading segments exposing the first element, for it has a narrower foundation and a more slender binder of closely set segments, completely covering the groundwork. Otherwise than in size of the two elements and in the set of the binder segments the two seemingly different technics are identical. Obviously this is a fully developed foundation coil of two elements, the foundation and the binder, which jointly move spirally in a counter-clockwise direction from center to rim; while the foundation, a passive spiral, constitutes the groundwork of the technic, and supports the active binding element. This last element follows the foundation in its general movement about the basket, and also revolves in a smaller secondary spiral as it encircles the round of the foundation in process and unites it to that of the previous round by catching into its upper edge between the segments of the binder, without interlocking with them. This smaller secondary spiral is a plain one, which during the process of uniting completely covers the multiple foundation (Fig. 58). Close coiling is the most substantial basket technic of these people, serving in places where great strength and durability are required, together with closeness and evenness of texture, as in the milling industry, the preparation of foods, the transportation of fine grains and seeds, as well as the transporting and raising of water, which was done in the old time water-tight well-buckets and bottle baskets of the Papago.

The Indian villages of this arid land, like the parched vegetation, appear to have sprung out of the brown earth, for when seen from a distance, the dust-covered huts of twigs and mud seem to be a part of the desert itself. Upon coming nearer, however, one discovers that these circular and rectangular shapes are the crude works of man; that here human life is sheltered, and that many of the processes for providing food and clothing are everywhere evident, since signs of these are seen scattered about in black-

ened cooking pots, sticks of charred wood, old cans and bits of rag. In the shade of a rustic arbor, built of tree trunks and roofed over with twigs and mud, stands the water olla on its forked tree-stump, for at this fount the hot and dusty inhabitant of the desert finds cool refreshing drink. Before the door are further indications of domestic activity, an old basket tray charred by hot coals, another stained with red peppers, and to the left a battered adobe oven; while nearby on the ground rests the flat stone-mill, the metate, its supplying wheat tray at one side, its receiving flour tray at the end, although the woman grinder has vanished, for frightened at the approach of strangers, she has hastily fled from her work and escaped into the hut. Beyond, squatting upon the ground, is a neighbor potter plying her art; while far off among the distant mesquite trees is another woman returning from the fields laden with her basket bowl upon her head. Of these busy scenes the ones which interest us most at this point, are those where baskets play an important part, the coiled bowls and trays, which minister to so many Papago and Pima wants. Their varied contents can best be accommodated in these two forms, each shape with a distinct function, though occasionally the tray performs the duty of the bowl, and the bowl that of the tray. Other shapes, the olla and waste-basket forms seen in curio shops, are trade baskets made for white man's use and not for the Indian's.

The primary function of the basket bowl is that of transportation, its secondary use that of a temporary receptacle, (Figs. 42–43). Like the olla water jar, during carrying it is balanced on the head without the aid of the hands, but unlike the olla, at the present day it transports dry produce only, fruits of the cactus, vegetables, grains, berries, and small seeds, while formerly it was employed as a basket for watering horses, drawing water from the well, and similar purposes. Isaac Whittemore in 1893 tells of Pima women removing dirt from irrigation ditches in basket bowls.¹ Still earlier, some thirty or forty years ago, white settlers in Papagueria remembered seeing water carried in two water jar baskets, thrown over the saddle horse on either side, or attached to the saddle itself. The Papago still do much gathering in the basket bowl, but white settlers have located near the Pima villages, thus bringing markets in such close proximity as to discourage much of the old-time gathering of wild things. Besides, for a number of years the United States Government has donated a wagon to each



^{1 &}quot;They had not pails or vessels of wood, but were not slow to invent. They therefore took willows which grow in abundance along the river, and a reed, and strip the bark, then very adroitly split these with their teeth, and wove them so closely as to hold water. This they accomplished by means of needles or thorns of cactus. They used these baskets while digging small ditches, the women filling them with earth and carrying them up the bank." (Isaac T. Whittemore, "Among the Pima," p. 53, Albany, N. Y., 1893).



Fig. 40

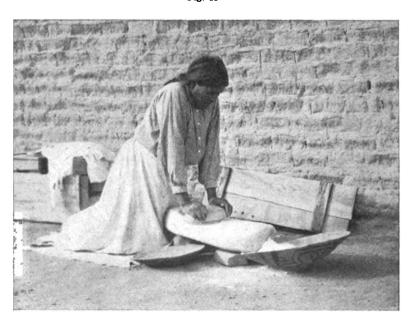


Fig. 41.

Fig. 40. Pima Woman winnowing Wheat. The wheat is poured upon a matting and the wind carries away the chaff.

Fig. 41. Pima Woman grinding Wheat. From a basket tray at her side she places a handful of wheat on the metate and after grinding with the muller, pushes the ground flour into a second basket.

Indian family where the man builds an adobe house and cuts his hair. The possession of these wagons has brought the markets within still easier reach, so that this, together with the fact that many of the younger Pima laugh at those who continue to journey for wild things, has lessened the use of the bowl for transportation.

The function of the tray is not that of storage, or transportation, but household service, where it ministers most efficiently (Figs. 40-41). Only on ceremonial occasions is it employed at the present time, as an eating dish, when the small water-tight tray of the Papago medicineman is called into service, both as a drinking cup and a piñole dish, when on expeditions to the sea for sacred salt, and when curing the sick (Fig. 60f). The tray is the most frequently used basket of these tribes, aiding in the preparation of all kinds of foods, and since few of these are eaten raw, it is a most constant helper in their culinary work, taking the place of white man's pan, bowl, and plate, for the cutting up and getting ready for cooking squashes, pumpkins, roots, beans, and other vegetables; different kinds of meats; fruits, berries, seeds, and cereals. This continual use of the basket tray has greatly endeared it to the Indian woman, who handles it with loving care, knowing how repeatedly it has ministered to her wants. How many harvests have come and gone through which it has served her; what a great variety of foods it has protectingly held for her; how many meals it has helped prepare for her hungry household!

Wheat (pelca, or pelka) has been a staple food with the Papago and Pima since introduced by the white man many years ago. In prosperous seasons the Pima do not mill their wheat, they exchange it for flour; but when times are hard they return to their old custom of milling the wheat. Few of the Papago buy flour even in prosperous years, but continue the old methods of milling. For this the tray serves in two distinct processes, in the winnowing and in the grinding. Wheat is winnowed in two ways: it may be tossed in the tray, or poured from it onto a canvas spread upon the ground (Fig. 40); in either case, the wind acts as the agent for disposing of the chaff, for the winnower so places herself that it will be carried off in this way. When following the first method, the woman sits on the ground and lightly and deftly tosses the wheat kernels which have been previously loosened from their hulls. At times between tossing she gives them a hard rub on the base of the tray to loosen any hull that still adheres to the kernel; then she continues the tossing without losing a grain over the rim, while the wind takes care of the chaff. During the second method of winnowing the woman stands while she pours the wheat from her tray basket upon the square of canvas, and the hulled kernels fall to the ground, the wind disposing of the chaff (Fig. 40).

In flour making the grinding process follows that of winnowing. This is done on the heavy stone metate, (Fig. 41), a flat rectangular stone with a slight dip on its upper surface. It is usually found standing near at hand just outside the door, or under the rustic arbor, or if inside, within the storage shed, or possibly, but more rarely, within the house itself. During grinding, the metate may rest flat upon the ground without a prop, but more commonly it is tilted a bit at the front edge on a small stone. The wheat is ground upon its surface by means of a flat rectangular muller stone rubbed across it; and it is a hard grind the Indian woman must give her grain to turn it into flour. From the supply tray at her right, she puts a handful of unground grain upon the metate, and rubs the muller over it, until it is very fine, when she pushes the ground flour over the back edge into the flour tray beyond. Incidentally, a minor process enters into milling before the grinding, that of cleaning the wheat, as it must be thoroughly looked over and freed of stray seeds and bits of dirt that may have fallen in among the kernels of wheat. A deeper tray is used for this, if the family is provided with trays of varying depths, since there is less danger of spilling the grain as it is pushed about with the hands, or rocked from side to side, that all the stray specks and dirt may be found.

Ground wheat, corn, and other seeds are cooked in a number of ways: baked in loaves, or tortillas, fried in suet; or boiled in soups and gruels. In most of these instances, the basket tray serves as the mixing dish, holds the dough while waiting to be placed on the fire, and receives the food when cooked and ready for serving. Only one instance was reported where in former times the tray served as an eating plate for a mixture of corn and beans similar to succotash.

Another grinding process is carried on not by rubbing, but by crushing in a wooden mortar constructed of a cottonwood stump, when either a vertical section is hollowed out at one end and the stump stood on the other end (Fig. 42); or a horizontal section is dug out on one side, or around a knot hole (Fig. 75a). The size of the stone pestle for crushing, varies from a very light weight to one of such heft as to require both hands in the lifting, since it is suited to the seeds to be ground. The food most frequently so crushed, or ground, is the mesquite bean; although other beans and seeds are put through the same process, during which, as in grinding on the metate, both supplying and receiving baskets are present (Fig. 42).

For parching wheat with live coals, a pan, or a wooden tray, is now ordinarily employed, but when neither is handy, the Indian woman finds for this purpose a much-worn basket tray, as is attested by the scorched and charred linings of numbers of these old trays, and this, no doubt, was the old custom before civilization brought the pan and the wooden tray.



Fig. 42.

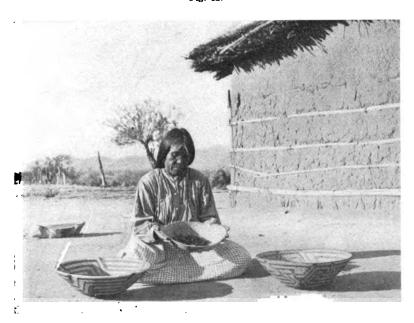


Fig. 43.

Fig. 42. Grinding Mesquite Beans in a Wooden Mortar made from a Cottonwood Stump.

Fig. 43. Pima Woman parching Wheat with Live Coals; one bowl contains unparched and the other parched wheat.

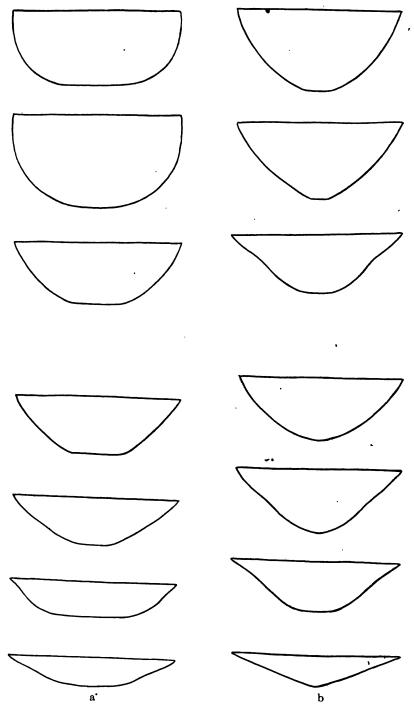


Fig. 44. Forms of Papago and Pima Bowls and Trays: a, Papago; b, Pima. 196

For the parching, live coals are raked into the tray and the grain thrown in on top, when a series of tosses brings the lighter coals to the top, and sends the wheat to the bottom; continued tossing keeps the two in motion, and a puff of breath blows the ashes away. When the process is completed the ever-present basket receives the parched grain as did a similar utensil furnish the unparched grain (Fig. 43). Wheat is also roasted in a bit of broken pottery, over the live coals of the open fire within the hut.

Trays of close coiling frequently take the place of covers for the large grain bins of coarse coiling and for pottery ollas. It is seldom a new tray acts in this capacity, more usually it is the impaired trays, or the brokenout base of some old bowl or tray which serves the purpose of a cover.

In addition to the utilitarian functions of the basket tray, it has another, a ceremonial use, for turned wrong side up any hard firm tray of sufficient size, such as are in common household use, may be called to act as a drum upon ceremonial occasions, either at dances, or when the medicineman is doctoring the sick or modifying the weather conditions. At these ceremonies, the medicineman accompanies his songs with a beating on the basket drum in rhythm either with the hand, or a stick.

Besides baskets for their own use, the Papago make a basket for sale of sotol (Yucca elata) upon a foundation of beargrass (Figs. 67 and 69). These are not so strong or smooth as those made of "tree material" for household use, and are only called into domestic service when the Indian woman finds all her baskets of "tree material" are otherwise employed. The sotol basket is disposed of rapidly to curio dealers, missionaries, and others interested in helping the Indians financially. From this extensive distribution of the sale basket has come the false report that Papago coiled baskets are constructed exclusively of sotol.

In proportion and general contour Papago bowls are broad, globular, flat based forms (Figs. 44 and 59d), whose qualities of shape harmonize with their heavy, solid, unyielding construction, which when function requires are water-tight (Fig. 59b). As would be expected, the wall is thick (Fig. 59b and 65c) and hard, and built with full, well-rounded curves, and a soft edge, tending at times to curve inward (Figs. 59b, d). The Papago trays follow the same plan as the bowls, although the slight height of the tray form, excludes some of the qualities shown in the bowls (Fig. 44). Papago water basket jars, now no longer used, were tall, slender, bottle shapes with an incurving neck. In general proportion and shape, Pima bowls are taller and more oval than Papago bowls, with a narrow curved base (Figs. 63a, 65d, 44). Their build is lighter, more pliable, and never water-tight; their contour more subtle in line, with sweeping upspringing curves; the wall thin and springy; the edge sharp and clean cut, with no



tendency toward incurving. As with the Papago, the tray forms of the Pima have similar characteristics to the Pima bowls (Fig. 44).

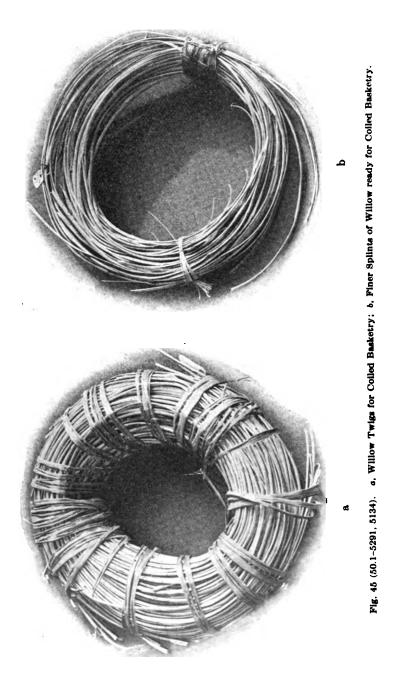
In size, Papago bowls range from 40 cm. to 50 cm. in diameter, and 18 cm. to 22 cm. in depth (Fig. 44); the deep trays from 40 cm. to 50 cm. in diameter and 11 cm. to 16 cm. in depth (Fig. 44); and the shallow trays from 32 cm. to 40 cm. in diameter and 4 cm. to 7 cm. in depth (Fig. 44). Pima bowls are slightly taller than those of the Papago (Fig. 44) and their trays are slightly broader (Fig. 44).

The material for the foundation element of the Papago is beargrass (Nolina erum pems), although Spanish bayonet (Yucca baccata) is substituted as a makeshift when beargrass cannot be obtained; the foundation element of the Pima is cat-tail (Typha angustifolio), and when this is lacking the poorer parts of old cottonwood twigs (Populus fremontii). Summer is the season for harvesting beargrass, when the women generally go for it in groups, at the present time in wagons, but formerly on foot. Even when the trip is taken by wagon, an entire day is none too long for the journey, so when the time arrives for a particular group of friends to gather this basket material in the foothills, they must get an early morning start. grows in great bunches from 30 cm. to 60 cm. in diameter, and from 60 cm. to 90 cm. in height. In the center of these clusters the grass stands erect, but around the edge it is dry and bends to the ground; so this outer portion is rejected by the gatherers and only the center cut away with axes and large butcher knives. Each woman collects for herself as much as she needs, some selecting with care the material in the best condition, others gathering more carelessly; when the beargrass is carried home it is laid on the ground to dry in the sun for four or five days, but it must be taken in during showers. When needed for basketry it is taken without moistening, and split by the teeth, fingers, finger-nails, or at times a knife, and worked into the basket, dry. Spanish bayonet is employed by the Papago when beargrass is not at hand; its preparation and use does not differ from that of the latter material. A third material for the foundation was reported by one woman in Little Tucson who remembered the Papago years ago using a "tree material," but what this tree was she did not know. Cat-tail is gathered by the Pima in a manner similar to that of beargrass, although it is found nearer the villages, so the journey is not so long. As with the Papago, these harvestings are social affairs, where the women take their lunches and spend the day. The hollow stem of the plant is the part needed for the foundation element, which is split dry, and worked into the basket without moistening (Fig. 48). In districts where the Pima cannot obtain cat-tail they substitute a foundation material which constructs a coarser basket than the cattail, that of finely split twigs of cottonwood, but only those which are too old and brittle to serve as a binder material, since pliable twigs are too precious to be used in this way.

The materials for the binding element are the same in both tribes, except on Papago sale baskets and a few for home use. These materials, with this exception, are splints of willow (Salix nigra), and of cottonwood (Populus fremontii) found mostly in the Pima habitat, and splints from the seedpods of martynia (Martynia probosidea) found in both habitats. To these is added a fourth material for the exceptional Papago baskets, the sotol (Yucca clata). Spring is the season for gathering twigs, the willows (Fig. 45), and the cottonwood, autumn is the time of year when martynia is ripe (Fig. 46); and summer is the harvest time for sotol.

When the first green leaves appear in the spring, the Indian woman goes out to cut the willow twigs from the trees which border the few small streams, or the dry stream beds. Around the foot of the tree, and on the trunk, where a bunch of fresh growth is sent up, she finds the pliable young twigs suitable for basket work and although the first she can easily obtain, for the last she must climb. The twigs are cut with a sharp knife, tied into bundles and carried home upon the head, or in the kiaha on the back, where they are immediately cleared of the bark, as otherwise it will adhere to the wood. In olden days, the Indians loosened it from the wood by boiling, but that practice has long since been abandoned. In stripping off the bark, the start may be made from an end of the twig, or the teeth may lift the bark midway between the ends, and the inserted thumbs then peel it off to the extremities of the twig. This removes one half the bark, another such stripping clears the other side of the twig, and the ends of these barkless twigs are split in two by the teeth and stripped apart with the fingers. For a finer binding element the strips are again split, after which they are rolled into coils ready for barter or storage (Fig. 45). Before using for basket-making, a thorough soaking is necessary, but only of a few splints at a time. Cottonwood splints are gathered, prepared, and used as those of the willow, and yield a whiter, less smooth and less durable binding element than the willow.

Sotol is a yucca from the higher mesas. Its long narrow leaves, radiating from the central stem, are used for the binding element on Papago sale baskets. Only the young, tender, inside leaves at the center of the plant are suitable and are grasped and pulled out with the hands, stripped immediately of their stringy edges, and split down the center midrib with the basket awl, before being spread on the ground for two or three days to dry. When wanted for coiling, a few strips are soaked in hot water for a short time, and then wrapped in a cloth to keep damp, but before using, the midrib is shaved off with a knife by holding the strip taut between the teeth and the left hand while using the knife with the right.



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Fig. 46 (50.1-5139, 5137). a, Martynia Pod; b, Martynia Splinte for Black Designs on Colled Basketry.

Martino, popularly called martynia, and also devil's claw, is the black material employed for designs. It is the peculiar shaped seed pod of martynia, which furnishes the basket material, for from the long elliptical pod extend two slender hooks from 20 cm. to 35 cm. long. From the back and front of these hooks are stripped short black splints, two from each hook Aside from this decorative use, martynia has another very practical one, that of supplying strength to parts of baskets receiving the greatest strain and hard usage, as it is the toughest and most durable basket material of the region. For this reason, it is used to construct the base of baskets in both tribes, the edge of the Pima ware, and many entire Papago bowls where a very strong structure is desired. Although martynia grows wild, most of the Indians seed it in their fields, since they find the cultivated plant yields pods with hooks of greater length, finer grain, and a better black. Only a few of the more shiftless Indians gather it wild. Martynia, both the cultivated and the wild, is collected in autumn when the seeds have ripened, but it must not be allowed to get frosted, for should the frost touch the pod-hooks, they will lose their good black, and become a dull grey. The pods are broken from the plant with the hands, hooked together in great bunches, wrapped in a cloth, and taken home either on the head, or in the kiaha. They are already dry when gathered, and as they are not stripped at this time, are now in condition for barter, or for storage.

When material is needed for basket-making, some of the pods are taken from the bunch and buried for a day in a damp hole under ground, with water poured over, although occasionally one finds a woman who has abandoned the old method and simply soaks her martynia pods in boiling water. When the pods are well moistened, the basket maker seats herself on the ground near the hole where the pods are soaking, and reaching for a pod (Fig. 46) splits two strips from each hook, one from the front, the other from the back. The woman here (Fig. 47) has relinquished the old position and prefers sitting upon a box instead. For stripping, the point of the hook is split into three, either with the teeth, or with the sharp basket awl against a board when the hook is stripped into three parts by holding securely between the teeth one of the outside divisions while the fingers peel away from it the remaining portion of the hook. The other outside strip is then torn off, when the outside strips are gathered together in bunches till needed (Fig. 46). When wanted for basketry, a few splints are again moistened and the white pithy wood which adheres to the inner side of these strips is scraped away with a knife, while the splint is held between the teeth and the left hand.

Nature has provided the Indian woman with her most valuable basket tools, the fingers, teeth, and feet. She supplements these natural tools

with artificial aids, the ax, or hatchet, the knife and the awl for assisting in the gathering, the preparation, and use of her basket materials. These tools she now may purchase from a neighboring city of the white man, if it is not too distant; but more often she fashions them herself, for frequently her home is in a remote village. The tool-fashioning skill of the Papago exceeds that of the Pima, especially in making the awl, which is a more shapely and carefully constructed tool than that of the Pima. In fact the Papago are neater, more thrifty, and painstaking in many ways, although in basket technic they are excelled by the Pima.

Of the tools for cutting, the largest is the ax, formerly of stone, but now a store-bought article, used for felling coarse materials such as beargrass. As a substitute for the ax in gathering lighter weight materials and cutting twigs the large butcher knife is employed; for the preparation of material, knives of all sizes, preferably the smaller are in use. These last may be old case knives, whole or broken off blades, or the knife may be something put together by the Indian herself, an old picked up blade, rubbed into shape on a stone and furnished with a handle of gum, or of two bits of wood gummed to the blade (Fig. 49a).

Along with the cutting tool there is required one for perforating holes for the passage of the binding element. The sharp pointed awl meets this need, supplied in early days by a needle or a thorn of cactus, and later by a bone or a bit of mesquite wood. At present, the only materials employed to make these tools are nails or bits of old umbrella rib rubbed to a point upon a stone, while those for the handles of these points are wood, or gum. Wooden handles have the bits of umbrella rib either driven in with a stone, or burned in after heating if the wood is hard, when the steel may be run into either end of the handle. The simplest method is to sharpen the steel and drive the point up through the handle from its lower end, but this method is not practised as frequently as that of pushing in the steel from above, either sharpened or unsharpened. The unsharpened steels, when run in from above, are driven into the handle and the remaining exposed steel then sharpened: the sharpened steels may have their points driven in, or burned in, before the remaining exposed portion is sharpened. When the steel point is completed the handle is shaped by whittling and smoothing with a knife. Papago handles are of mesquite wood, or old broom handles; Pima are of willow, cottonwood, mesquite wood, mesquite root, or some old The material for gum handles is the secretion of a tiny insect (Carteria larreae), found upon the greasewood twigs. This twig bearing the secretion is broken off, held over the fire until the gum is softened, and

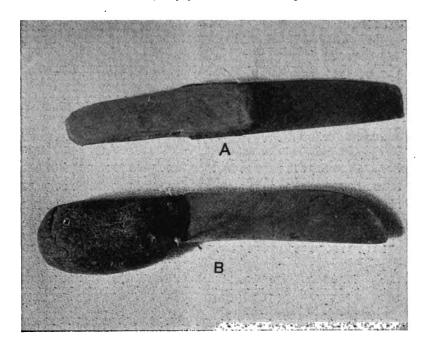
¹ Isaac T. Whittemore, ibid., 52; Frank Russell, ibid., 135.





Fig. 47. Splitting the Martynia.

Fig. 48. Splitting Beargrass for the Foundation Element.



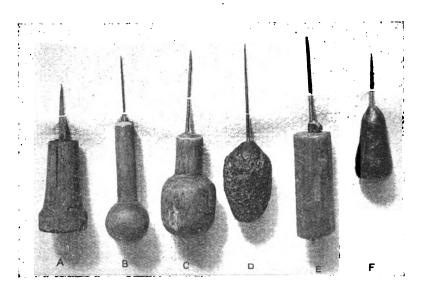


Fig. 49 (50.1-5161, 5162, 5218, 5221, 5155, 5216, 5156, 5157). Basketry Tools, Papago.

then shaped with the fingers about the end of the steel, when, with cooling, the gum becomes hard like wood (Fig. 49b). Another gum less frequently used is creosote (Covillea tridentata, or Larrea Mexicano).

At almost any hour of the day one will find some Papago or Pima woman before the door of her hut at basket-making. Like other duties, this is a part of the regular work of this busy woman, for she is expected not only to tend to the regular household affairs, but to bring all the fuel and water and in olden days to help in the fields, and for these she has need of utensils for pottery and basketry and so must provide herself with them. Most basket makers learn the art from their mothers when young girls, but now and then one is found who has acquired the craft when a grown woman. Judging from the present results of makers of coiled ware it takes a lifetime to perfect the art, since the old women are now making the best baskets, although it is possible that this is due to the influx of civilization which tempts the younger generation to abandon the old arts for the customs of the white man.

When making coiled baskets the Indian woman sits tailor fashion on the ground upon a square of canvas (Fig. 53). If the day is hot she selects some comfortable spot, usually on the shady side of the hut; if cool, she sits in the sun; but when cold weather sets in she is driven within doors, except during the warm midday. Within she plies her art just inside the door, her only means of light as few huts have windows, but when very cold days come she may be forced to stop basket work entirely for then the door is closed. Then she squats beside the low fireplace with its fire of mesquite wood, or before a pan of hot coals in the middle of the room, for these women wear very little clothing, perhaps nothing but a cotton dress even in the coldest weather. Placed beside the basket maker, to assist in the work, are the dish of water for moistening and soaking the materials; the basket tools, a knife and an awl (Fig. 49); as well as the materials, the dry split beargrass, or cat-tail, lying loosely on the ground for the foundation, and the willow, cottonwood, or martynia splints (Figs. 45-46) soaking in the dish, or the yucca wrapped in a dampened cloth for the binding element.

Coiling is begun by most peoples with a bit of the foundation material bunched together, bound, and then coiled in concentric circles. Few tribes deviate from this method, but the Pima and Papago make a very different beginning, a plaited center, most commonly constructed with six strips of binding material arranged in two groups of three strips each, and during the making either laid on the knee or held in the left hand during the first few moves. The two groups are placed so as to cross each other at right angles near their center, as seen in Fig. 50°, which is the back of the center. One set of ends of the lower group is then bent up and over the front so as

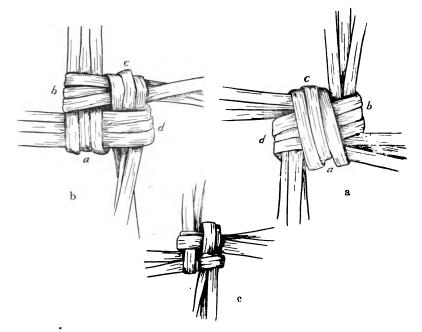


Fig. 50. Beginning of Close Coiling.

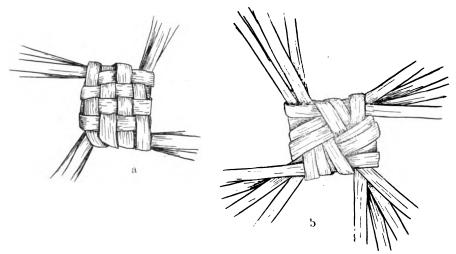


Fig. 51 (50.1-5124a). A Second Close Coil Beginning, Papago.

to pass over its own strips, but deviating slightly toward the left (Fig. 50a a). The next group of ends, the left, is similarly bent, crossing it at right angles over the first group of ends (Fig. 50b b). The third group is similarly bent, crossing the second ends (Fig. 50c b), and finally the last group is bent across the third group, but it must be slipped under the first group to hold securely (Fig. 50d b). The ends are now pulled tightly in place that the center may show four small squares within a large one (Fig. 50 b). At this point the center is turned over, so that the four small squares will be below, and the

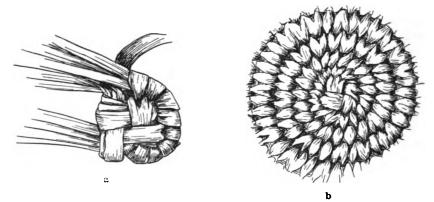


Fig. 52 (50.1-5125, 5196). a, Coiling Begun; b, Further Coiling, Papago.

first diagonal crossing of the two groups will be above (Fig. 50 a). Each set of ends must now duplicate the moves before made on the front, that is, each group is bent so as to cross the center in regular succession to form the four squares, giving a second face like Fig. 50 b, or a double faced center as in Fig. 50 c.

Another center is occasionally used, although it is not so common as the one just described. Its eight strips are arranged in two groups of four elements each, which cross at right angles, and plait over and under one another in regular checked plaiting (Fig. 51a). The four ends of one side are then bent across the top as in the first group of ends described in the previous center (Fig. 50). In like manner, the ends of each side are taken in successive rotation and bent across the previous set as in the groups of ends in the previous center (Fig. 50–51).

Either of these centers is now ready for regular coiling to begin, before which, however, all the strip ends must again be wet to avoid breaking when bent. A group of ends is then turned to the left to act as a foundation and bound down to the center by an extra binding element which is added here. It passes around the group of ends and into the edge of the center through a

hole already pierced by the woman's awl (Figs. 54, 56), and so continues until the second group of ends is reached, when this group is turned to the left and bound down as the last group (Fig. 52a). This is continued until the point is reached where the binding element was first introduced, when splints of the foundation element, beargrass or cat-tail, are added to the splints already acting as a foundation and all are caught down as before by the binding element, which enters the edge of the first row of coiling. The binder enters the previous coil between the segments of the spiral, or stitches as they are sometimes called, and does not interlock with them (Fig. 52b). Pima basket makers are very exact in this placing of the binding element, giving their baskets a more ridged surface, while the Papago are less particular, producing a rougher, less even surface.

So coiling continues until the base has reached the desired size, when the walls are begun by a change in the position of the foundation coil in This is not placed, as before, on the top of the last round of coiling, but is bound to its side and at such an angle as is proposed for the erected wall. It is this shifting of the position of the foundation coil which makes possible the shaping process, allowing the walls by incurving, or outcurving, to alter their outline to suit the fancy of the maker. Figs. 53-58 show quite clearly the process of coiling: the woman's position on the ground in front of her hut (Fig. 53); the puncturing of the hole by the pointed awl (Fig. 54); the biting sharp the end of the binder so that it may easily enter the hole when the awl is lifted (Fig. 55); the pushing of the binder through the hole (Fig. 56); the pulling it tight and the holding of the awl when not in use (Fig. 57); and the adding new splints to the foundation (Fig. 58). binding splints are joined by pushing the new splint through the last binding hole and covering the last segment of the old splint before entering the newly punctured hole. Figs. 53-57 show a Papago basket maker at work on the small beginning of a coiled basket, and Fig. 58 represents a Pima woman with an almost completed bowl adding fresh foundation material.

Grim necessity no doubt had much to do with the development of shape, size, and technic in basketry, but other causes are responsible for the presence of design and the finer qualities of craftsmanship, for it was freedom from the strain of necessity which nurtured into being the fine arts. Leisure and abundance of time, is the staunch friend of the Indian in working out basketry decoration, time to play with her units of design, to arrange them into patterns to best fit them to the purpose in hand. So in the designs on the foundation coil of these tribes, which in abundance and elaborateness of pattern hold first place among their basket technics, there are interesting examples of invention and adaptation. The design of foundation coil is less influenced by technic than other kinds of basketry, especially when





Fig. 53. Papago Basket Maker, showing general position. Fig. 54. Papago Basket Maker, showing use of the awl.





Fig. 55. Papago Basket Maker biting Sharp the Binding Element.
Fig. 56. Papago Basket Maker inserting the Binding Element in the Hole made by the Awl.



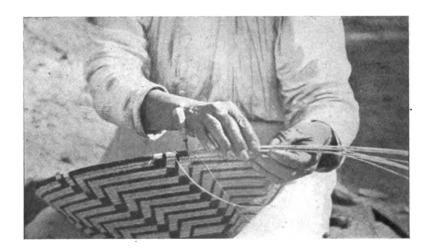


Fig. 57. Papago Basket Maker tightening the Binding Element. Fig. 58. Pima Basket Maker adding Foundation Material.

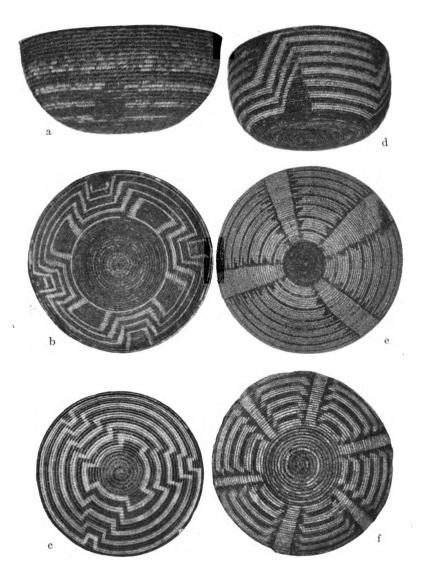


Fig. 59 (50.1-5174, 5176, 5179, 5177, 5182, 5115). Papago Baskets. Old water-tight baskets of exceptional interest.

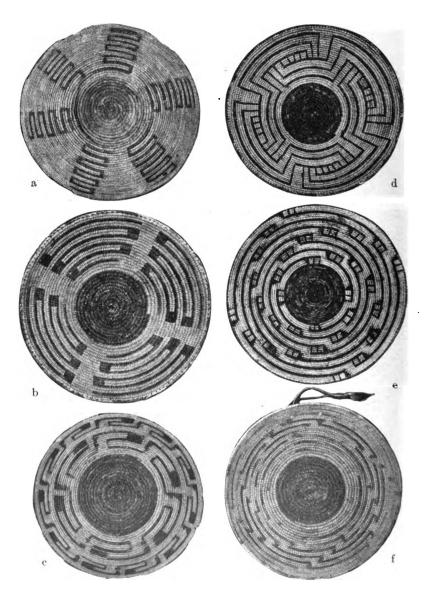


Fig. 60 (50.1-5112, 5181, 5308, 4205, 5280, 5187). Papago and Pima Baskets: a, b, f, Papago; c, d, e, Pima. f is specially interesting as the food tray of the medicineman of Santa Rosa.

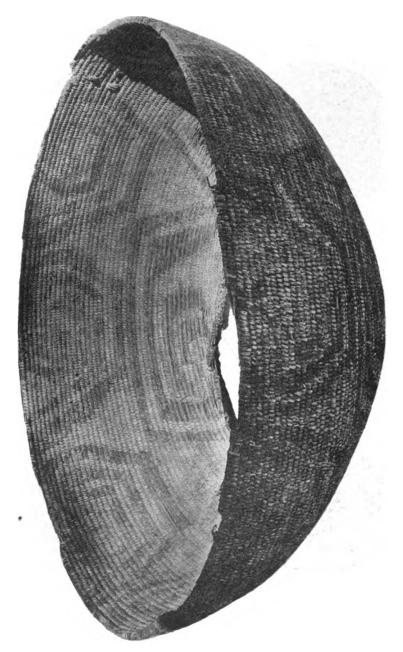


Fig. 61 (50.1-5172). Old Papago Bowl, five generations old, showing long hard use, as well as an advanced state of the art of collect basketry when it was made.

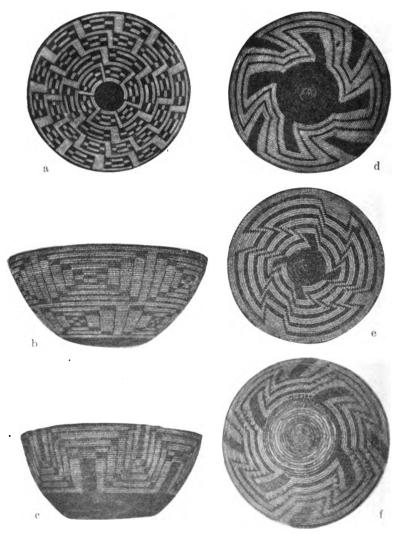


Fig. 62 (50.1–4769, 4770, 4786, 5306, 5185, 5282). Pima and Papago Baskets. a, d, e, f, Pima; b, c, Papago.



Fig. 63 (50.1–4109, 4724, 5282, 5175, 50–2748, 50.1–5264). Pima Baskets.



Fig. 64 (50.1–4045, 4106, 4207, 5254, 5310, 5265). Papago and Pima Baskets. a, b Papago; c, d, e, f, Pima.

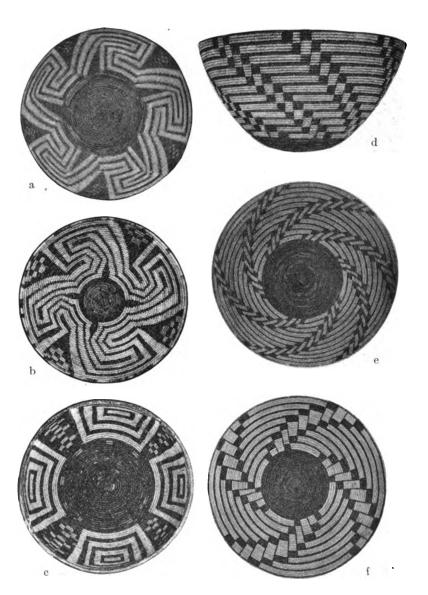


Fig. 65 (50.1–5253, 4103, 4566, 4716, 4717, 5309). Pima and Papago Baskets: a,b,d,e,f, Pima; c, Papago.

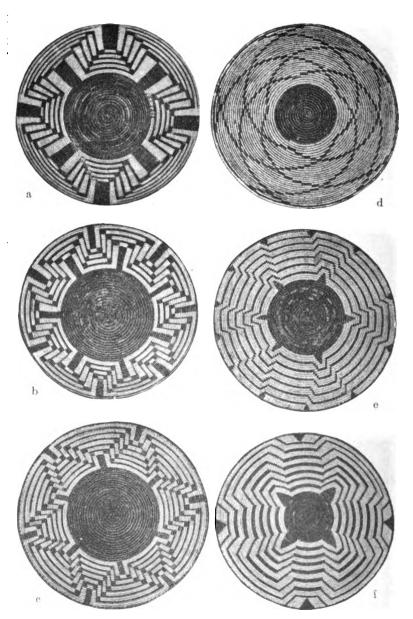


Fig. 66 (50.1-5305, 4730, 5329, 5183, 5245, 5256). Pima Baskets.

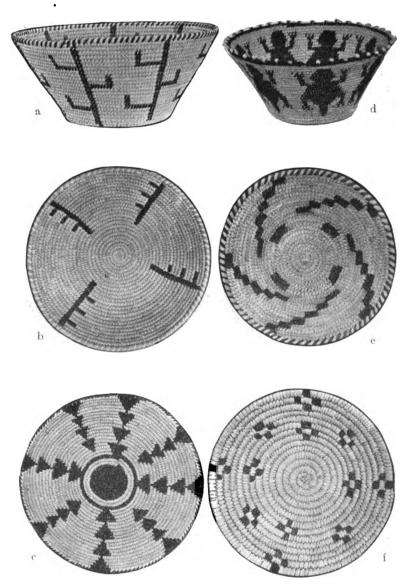


Fig. 67 (50.1–4190, 4089, 5197, 4191, 4088, 4065). Modern Papago Baskets.

the binding splints are narrow and the foundation coil slender. The greatest limitation comes from the width of the foundation element, whose breadth is troublesome in arranging curves, which must be built in series of steps.

Design here is in black and light straw color; more usually a black pattern on a light ground, as with the Pima, and at times, the Papago; or a light pattern on a black ground as only with the Papago. The decoration is in line design, with at times accented portions, producing a fine dark and light effect as seen in the strong bold decoration of the Papago. Constant trading and interchange between the two tribes has mingled designs, making the decision difficult to which tribe a design belongs, for often designs from both tribes are found on the same basket. However, the

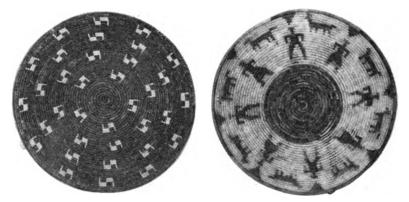


Fig. 68 (50.1-5303, 5113). Modern Papago Baskets.

general plan for Papago and Pima baskets is the same, a base of solid black, the entire wall acting as the field of design which is entirely filled with pattern.

As to the design motives, there are several theories, both as to the origin and design significance. Dr. Lumholtz states in his narrative of the Papago:—

That significance of decorative design is almost entirely forgotten. There is only one woman at the present time who is able to do first-class basket work and she cannot tell what the design means.¹

Dr. Russell on his visit to the Pima records:-

When questioned as to the meaning of the elements of these patterns, the basket-makers invariably replied: 'I do not know; the old women make them this way. They copied the patterns long ago from the Hohokam pottery.' ²



¹ Lumhoitz, Carl. "New trails in Mexico," 353.

² Russell, Frank. Ibid., 135.

The information given by the older Papago and Pima women in 1910–1911 was much the same as the last, "I do not know, the old women make them so." None of these, however, reported their being copied from the old pottery, quite possibly the women who so reported in 1901–1902 were gone. Besides, the copying has yet to be proven by a more intensive study of collections of prehistoric pottery from the region in relation to the basketry pattern. It may be found that Papago design motives are indigenous—survivals of an older prehistoric basketry design. Their strong direct simplicity suggests this, but a sufficiently comprehensive study has not as yet been made to substantiate this theory. It is hoped that the Quijotoa, Comobabi, and Baboquivari villages will yield up to some future investigator something of value on this lore.

Although the older women furnished the above report, some of the

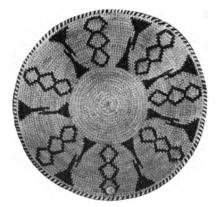


Fig. 69 (50.1-5194). Modern Papago Basket.

younger and more commercially inclined gave names to the more common designs. To all appearances these women had responded to the questions of travelers, who for years have been visiting here, for the meanings of these patterns, and weré reading into them modern names, such as recorded in the lists below.

Dr. Lumholtz lists the following Papago design names:—
Dog tracks, Fig. 65a, b, c.
Saguara, Fig. 67ab,
Turtle, Fig. 62a.
Martynia, Fig. 65ab,
Juice-falling-from-saguara-fruit, Fig. 60a.

Dr. Russell's list of Pima design names is as follows:—Atcuta — black center of all baskets.

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Kakiopins — "crossed lines."

Kamketcit — "turtle," Fig. 62a, b.

Mavspitchita — "locked together."

Moumvitcka — "triangular," "terrace," Fig. 63.

Opumusult — "parallel lines doubling upon themselves," Fig. 60d, e.

Pan ika kita — "coyote tracks," Fig. 65a, b, c.

Sa-si — "figured."

Sihitalduwutcim — "whorled," "spiral," Figs. 65d, c, f, 64 c.

Sisitcutcufik — "very much figured," Fig. 66e, f.

Stoa — "white."

Supeputcim kakaitoa — "striped with black and white."

Tasita — "set" or swastika.

Teoho-otcilt — "crooked lines" or fret, Fig. 60c.
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To these lists must be added a Pima name for a more recent design, not present fifty years ago, the "squash blossom"—Fig. 66a, b, c, and one given by the Papago to the design Dr. Lumholtz reports as "juice falling from saguara fruit," that of "deer tracks in woods," of which Fig. 60a, shows a simple rendering of a design with a number of more elaborate forms produced by folding and doubling the long continuous line. The design "dog tracks" is the same as "coyote tracks," and the design "turtle" is quite similar, but composed of more rectangular spottings, and quite frequently enclosed in a square, or covers an entire basket. One hears so frequently the design names, "coyote tracks," "turtle," "martynia," "crooked lines," "terrace," "squash blossom" that one is forced to believe that these designs have been so designated for many years.

An interesting transition stage is at present in process in the art of these people, both as to shape and design, owing to the influence of civilization: new shapes suited to the life of civilized man, and new designs due to his call for a meaning to the patterns. In response to this influence the Pima have greatly altered the shape of their baskets, so that curio shops are filled with the novel forms, waste-paper basket shapes, and large olla jars, beside a variety of smaller baskets, upon which are worked their old motives. These are not exact copies, but parts chosen from the old patterns and repeated in other ways, and often in a careless manner. To these are added, through the encouragement of traders, two other motives, the human form and that of animals. The Papago have introduced into their modern baskets, new material, new shapes, as well as new designs. But instead of arranging bits of their old patterns in a different way as did the Pima, they have for the last ten or more years been inventing fresh motives, based upon objects in their surroundings. Desert plant life has furnished many motives; the giant saguara is represented by a simple shaft (Fig. 69), or branched on one side (Fig. 67b) or branched on both sides (Fig. 67a); other cacti by a symmetrically balanced figure with the branches turning up, and others with branches turning down; a general plant form with a central stem and two balanced triangular shapes for leaves; yucca spines by a quadrilateral figure with a fringe of vertical points. Animal life is portrayed in designs of men and women (Fig. 68b); horses, dogs (Fig. 68b), deer, deer trail, coyote tracks (Fig. 67f), rat roads and horned toad (Fig. 67d); the heavens by three stars (Fig. 69); the fields by a design showing ground fenced in; and various other representations show roads, benches, stairs, steps, lightning (Fig. 67e), monuments, kiaha frame, smoke, fire, and arrow points (Fig. 67c). One Pima tray was collected from an old woman who was inventing her designs. Fig. 68a shows this tray with the design "night and stars." This example is a contrast in technic and careful planning of design to the cruder Papago design, whose new type of pattern has not as yet reached a developed stage.

Further consideration of pattern in connection with the units of design, their treatment and arrangement, together with a description of the figures illustrating Papago and Pima coiled basketry will be found in another section of this paper (p. 255).

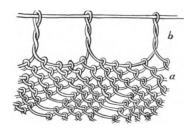
LACE COILING.

Decidedly unlike foundation coil with its two elements is lace coil, an openwork texture constructed of one element which corresponds in a way to the binder of the last technic. Crude coil had only one element but it served the two functions, a groundwork and a uniter. Here the foundation is entirely lacking and only the binder is present, but it unites by such a method as to form a surface without a groundwork. In some regions the technic is of stiff materials, when Mason styles it "cyclodial," in others, it is of soft fiber, strips of palm leaf, thong, or sinew, when it is named by the same author "buttonhole coil," and "coil without foundation." Technically, these three are identical, since their only difference is one of name; and the last term is the best since it more tersely describes the method of putting together. Another shorter and equally appropriate name is the one used here, lace coil, since its technic is that of point lace. Hence, lace coiling is a basketry technic of much significance, not only in its usefulness as a maker of openwork bags, carrying frames, garments, and headgear, both utilitarian and ceremonial, but also in its relation to the technic of lace making, for basketry lace coil is the crude beginning of modern point lace. It is of moment that this open texture of native string, from peoples of lower culture, has been carried into civilized life in needle-point lace,



done in thread by the peasants of Europe. At this point basketry and lacework meet, for the one element in basketry lace coil and that of the simplest point lace, are manipulated with the same spiral movement (Figs. 70-71).

The one flexible element in lace coil, like the binder of foundation coil,



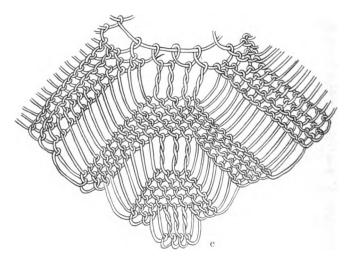


Fig. 70 (50.1-5150, 5237). a, Plain Lace Coil; b, Twisted Lace Coil; c, Elaborate Lace Coil.

advances about the bag, basket, garment, or cap in a large continuous spiral; and likewise while following this larger movement, it unites the adjacent rounds of the technic by looping itself in a small secondary spiral into the previous round of the technic. In this looping, the smaller spiral may move in a plain coil, or it may twist, interlace, or knot while so doing, giving rise to different types of lace coiling. The Pima and Papago practise but two

of these: plain lace coil (Fig. 70a), and twisted lace coil (Fig. 70b, center). This last varies slightly from the simple looping described above, by a wrapping about the upright portion of each loop, before passing to the next.

Although the one element in lace coil is fundamentally so like the binding element of foundation coil, the two technics as found in this region, differ both in the direction of the movement and in the method of building. The direction of the movement in lace coil is towards the right, or clockwise, in what seems to be the most natural direction with right-handed people, for the manipulation of one element with the right hand would more easily

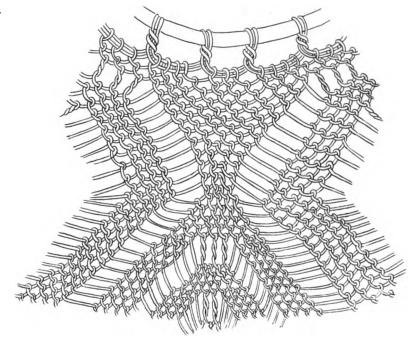


Fig. 71. Lace Coiling showing Elaborate Design.

progress toward the right; but in foundation coil the movement is towards the left, or counter-clockwise. Foundation coil is built up from below, each segment of the spiral rising above the last; lace coil is usually suspended during the making and worked downward, each segment of the spiral descending as the work progresses (Figs. 70-71). Another difference in technic is the interlocking of adjoining spirals in lace coil and its absence in the binder of the foundation coil.

The distribution of lace coiling is a wide one as it is met with in the tropi-

cal and semi-tropical regions of North and South America, Africa, and many of the Pacific Islands where soft fiber plants, and raphia palms grow. However, it is not limited to the habitat of these plants, but has a scattered distribution far to the north and south, not only where fibers of various kinds are found, but where animals furnish thong and sinew for its construction. In the hot lands of Africa, the technic most commonly fashions caps, fetishes, masks, armour suits, and bags; in the warm countries of America and the Pacific Islands, soft bags and carrying frames; in colder countries, game rings, travois, saddle bags, game bags, ceremonial headdresses, and even blankets. Still, in the wide distribution of this technic, nowhere is it found in the beautiful designs which appear on the lace carrying frames and bags of the Indians of southern Arizona and northern Mexico.

In olden days the women of this region were the bearers of burdens, either in the kiaha on the back; or in the basket, the bundle, or the olla upon the head. To assist in carrying their loads on the back, they constructed the conical shaped kiaha, or carrying frame, of lace coiling (Figs. 75-81). One early writer describes it as a "singular piece of framework made of poles with netting for carrying on the back and seen in every wigwam to answer the purpose of wheelbarrow." Since the advent of the horse among the Papago and Pima, the kiaha is not in such constant use as formerly. It was almost indispensable as a carrier for all manner of things and there was hardly a home without one. In its light but strong frame were carried fuel, food, and the materials for various manufactures. One day it might be piled with firewood, the desert mesquite; another, with beans, squashes, and grains; and still a third with grasses for baskets, reed for mattings, and fiber for kiahas; while on top of any of these loads might be seen an infant strapped in its basket cradle. Today, the kiaha is not an uncommon object in the out-of-the-way villages, where one can catch frequent glimpses of burden bearers bringing home their kiahas loaded with firewood, grain, beans, and other produce; or can observe the empty carrier leaning against the house wall, or propped by a post of the shed-arbor, or even tossed upon the roof itself.

Papago material for lace coiling is furnished by the great leaves of the agave (Agave sp.), and that formerly used by the Pima was the maguey, a species of agave. These fleshy, spiny-leafed plants grow in the higher hills, and are in perfect condition for yielding fiber in the rainy season, so it is obtained then. The best leaves are the soft inner ones next to the central stem, which are gotten with much difficulty, for they must be knocked off with a heavy stick. The leaves are done into a bundle and carried home

¹ Bartlett, "Personal Narrative," II, 236.

on the head, or are packed into the kiaha and carried on the back. The Papago and Pima construct only one article of lace coiling, their kiaha, or carrying frame. As it was in constant use before the advent of the horse, much fiber was needed for its manufacture. The fiber gatherers then went to the hills in parties, instead of singly as now, since the demand for fiber has dwindled with the passing of the kiaha, and individual women can secure the scant supply now needed.

Formerly, the fiber was prepared on the hills before returning, since fiber was lighter to carry home than the heavy leaves. For the preparation of the fiber, fires were built in pits, the hot coals drawn out, and the thick leaves laid in their place, to roast over night. The skin and pulp from the softened leaves were then scraped off with deer scapulas, leaving the free fiber, which needed only to be washed and dried. The present-day process of preparation, substitutes for the pit fire on the hill, the open fire within the hut. Over this the leaves are put to boil, or laid in the hot ashes to bake and when quite soft they are scraped to clear the fiber, which is then washed and bleached two or three days in the sun (Fig. 72b).

The spinning of the fiber in early days was also a social event, when a number of women assembled for that purpose. Now neighbors may gather, but seldom is there more than one woman of the group who is spinning. This she accomplishes not with the spindle, but on the bare leg, formerly on the bare thigh, but now on the leg just below the knee, for modern clothing makes the first an impossibility. The spinner sits on the ground with her left leg under her, and her right so bent as to be of service during the spinning. On this she places two strands of fiber with her left hand, and with the palm of the right, rolls the two simultaneously away from her, thus giving them a hard twist. These two tightly twisted strands are released by slightly raising the hand, and then bringing it lightly toward her, thus uniting and twisting the two strands into a two-ply cord, by rolling in an opposite direction (Fig. 72a). Spinning between the palms, or on some part of the leg, is widespread among peoples of lower culture, especially for the twisting of vegetable fibers.

The tools for converting fiber cord into this widely distributed technic, show a great diversity in the many localities. At times only natural tools are employed, as the fingers, at others a cylindrical mesh stick or a needle, the first being especially serviceable when an open texture is in process of construction, and the last when a close one. Needles range from those furnished by the animal kingdom, as a pierced fish bone, a hollow flange of the front limbs of the pteropos, or some other bone, as in New Guinea and other Pacific Islands, to those furnished by the vegetable kingdom, as

¹ G. A. J. Vander Sande, "Nova Guinea," III, 184.



the Mexican bamboo needle with pierced eye, or the long splinter palm midrib needle from tropical Africa, with one end sharpened for the point, and the eye end beaten to a fiber, so that it may be attached to the cord it is to carry by being twisted with it.

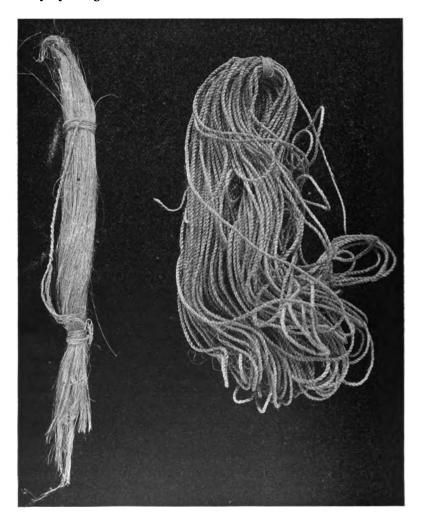


Fig. 72 (50.1-5293, 5148). Agave Cord and Fiber.

The Pima and Papago avail themselves of a number of means for pushing the cord through the loopings. The fingers only may perform the work, or a sharpened stick, or as has been reported a thorn needle formerly served this purpose, although no information at this late day corroborated this report. Years ago white men brought to them a new material for needlemaking, the umbrella with its steel frame. So a bit of old umbrella rib now furnishes material for most of the needles for lace coiling. A bit of the rib with one of the little eyelets attached which earlier fastened the umbrella cover to its frame is first broken off, one end is then rubbed down, and the other has the eyelet carefully preserved for the eye of the needle (Fig. 73a). More recently, the Indians living nearest the cities have procured for lace coiling the store-bought upholsterer's needle (Fig. 73b). The mesh stick, a short cylindrical, or flat rod, finds employment in some localities where openwork lace coiling is made, since over it the loops are thrown while

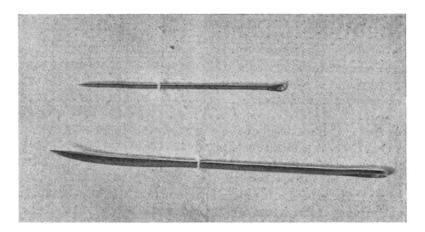


Fig. 73 (50.1-5239, 5240). Needles used for Lace Coiling, Papago. a, made from an umbrella rib; b, a store-bought needle.

making, to ensure a uniformity of mesh when the lace coil is of openwork texture. None of these were found among the Papago, or Pima, since here the closeness of the mesh does not necessitate, or even permit, its use.

In some regions an artificial support is employed for suspending the work during its fabrication: a post, or a twig, if the shape is circular; a lathe-like stick, or a rod, if it is rectangular. The Pima and Papago use no such support for the beginning rounds of the kiaha although later in the process they throw the beginning string over the big toe, and this acts as a stay for holding the work, thus freeing both hands for the management of the cord loopings. Seated on the ground in tailor fashion the Indian woman first makes a small fiber ring about seven centimeters in diameter and holding this in her left hand she casts upon it the first row of loops (Figs. 70, 74). She loops

a second row into the first row and a third into the second and so continues until a few inches of the work are completed (Fig. 74) when extending one foot she slips over the big toe the beginning ring and in this position continues the looping, or lace coiling, until the kiaha is completed. Interesting as is the simple looped string work, it cannot compare with the elaborate variations of the technic which occur on many of the kiahas after the first few inches of plain looping are passed, for the maker may vary the method of looping by catching the coil into the previous round of the work in two different ways, thus producing two units of design (Fig. 70). Again she may vary the groupings of the design unit, setting some close together, others farther apart, for great latitude in variation is possible in the rhythmic arrangement of the design unit (Figs. 70–71, 74–79).

That this feeling for rhythm is strong in the Indian woman is shown in the patterns. Intuitively, she makes use of this and other principles of design: rhythm, variation, subordination, principles of art which are taught with much labor to students in the schools of civilized man; but this Indian never spent a day of her life in an art school. Originally, in all probability, the variations evolved as the maker played with her string of fiber, but in more recent days a design was copied from that made by the mother. Today, few women make only the one pattern their mothers taught them when girls. This is too monotonous, they like greater variety, and so construct a number of patterns, but always copies of some old design. faculty for invention together with a native appreciation of design must have strongly influenced kiaha art, while possibly a third factor may have been a force in shaping it, namely, the intense holding of these people to certain ceremonial ideas and religious beliefs, for who can tell what superstitions have been looped into the wonderful point lace kiaha. Probably no one will ever know the meaning of these designs, since if they have significance, it has long been lost to the tribes through the great influx of civilization.

When the point lace cover is completed, the edge is bound by fiber cord to a twig of cat's claw (Acacia Greggii) bent into circular shape for the rim (Figs. 75-81). The cone of lace with its wooden rim is next fitted to a spider-like frame of giant cactus rib (Cereus giganteus), whose four poles are secured to the lace body by a cord of human hair, or of horsehair, which also ties together the lower ends of the poles at the point of crossing just below the lace cone (Figs. 75-81). A back mat of plaiting (see p. 158), with its soft back pad of shredded bark slipped in where the crossed poles rest on the shoulders, and a headband of plaiting (see p. 164) must also be firmly attached to the kiaha. There remains but one other thing to complete one of the lightest and yet strongest of carry-alls, a carrying frame so well fitted

to the heavy loads these Indian women must carry. This is the intensifying of the lace design with bright-colored paint of indigo blue and red earth, for any design may be painted, and from the applied color become so changed as to result in a number of variations. Paint as well as decorative fringes of skin are also added to the long front frame poles of young girl's kiahas.

During the loading of the kiaha it stands on the ground resting upon the two front frame poles which protrude a foot below the lace body, steadied by a third pole, the kiaha stick, or helping stick as it is sometimes called (Figs. 80-81). It is a long slender rod with a forked end provided for this purpose, that it may act as a prop since its pronged end catches under the kiaha rim and the other rests on the ground. When the kiaha is loaded, the woman gets down on the ground, and shoving her back under the front of the kiaha, slips the carrying band over the crown of her head (Fig. 80a). If the load is a heavy one she will grasp the kiaha rim with one hand as she helps herself to her feet with the kiaha stick in the other hand. load be light, it is not necessary to steady the kiaha, so as she rises, she grasps the kiaha stick in both hands (Fig. 81b). When the load is well balanced upon the head and shoulders, the kiaha stick is either thrust into the front of the load, or used as a staff while walking. When carrying the kiaha the Pima wear the hair parted with it hanging loosely to the front over each shoulder (Fig. 81), but as the Papago dress the hair in two braids a braid replaces the loose hair on either shoulder.

In abundance and variety of pattern, lace coil holds second place to foundation coil, the technic which constructs numberless trays and bowls; kiahas are few in comparison, one for many of the coiled wares, but these few exhibit an elaboration and a delicacy of pattern which is unsurpassed. The designs on the figures here shown are representative of patterns now in use, of which the greatest favorites are Figs. 76ab, 79ab, and 78a. The larger number of kiahas in use before the introduction of the horse and later the wagon, which has lessened the need for this transportation vehicle, may have furnished other designs, since the technic admits of many variations, as is seen on the rectangular bag shapes from farther south in Mexico and South America. These present other varieties in design but not more elaborate ones, since the lace coil patterns on the kiahas of this region are far in advance of those from other areas.

The design must be carefully planned from the very beginning, as made clear in Figs. 74 and 70–71, for it is built of the two varieties of lace coil, and in such a manner that plain lace coil forms a close texture and the twisted variety an open one, and the two interspersed form bands and figures at will. Counting enters largely into this complicated pattern making, which begins with some rhythmic arrangement and unfolds and grows as the lace coiling



continues, widening from time to time with the enlarging form of the coneshaped cover. It is the entire surface of the lace cover which serves as an unbroken field of design, over which the pattern is spread in two types, the encircling and the radiating, the last of which is the most common and probably in earlier times, the customary one.

Usually, the radiating pattern is divided into four parts, as if planning for the four poles of the frame, and on some kiahas the designs are nicely fitted to the poles but on others more poorly. At times the four divisions are strongly indicated, as in Figs. 75, 76, and 78a, and again less noticeably, as in Figs. 79 and 78b. These divisions are generally marked by a shaft extending from apex to rim, Figs. 78a, b; or part way from the rim, Figs. 76, 77a, and 79; or a short distance from the apex, Fig. 75b. quently the shaft tapers from a wider base, especially if rising from the apex of the kiaha (Figs. 75b, 78), but if dropped from the rim it frequently grows to spear shape (Figs. 76, 77a, 79), while again, but less seldom, it may hold to uniform width throughout (Fig. 77b). The design between the shafts may be an entirely distinct unit in itself (Figs. 75a, 76, 77, 78), or the design of quarter sections may be merged into one pattern (Figs. 79, 75b). If the first, the enclosed designs may be formed by horizontal bands (Fig. 77b), oblique bands (Fig. 78a), rows of triangles (Fig. 78b), balanced figures (Figs. 75, 76, 77); or the pattern may consist of meandering frets (Fig. 79) (see later description of kiahas, p. 234).

The addition of color to these designs is the finishing touch, as it intensifies certain parts and also allows a degree of diversification, since any design admits of a few variations through the application of color. When the lace coiled covering is completed and stretched on its frame the red or blue mineral paint is applied to the openwork bands only. An interesting experience long to be remembered was the gathering of three or four Indian women around an old uncolored kiaha which a Pima was supplying with a new rim stick. All wanted the kiaha painted and each suggested a different design, and clamorously insisted that her design be applied.

The three small centers of kiahas on Fig. 74 show the beginning of three different designs after the first few rounds of lace coiling have been passed. Fig. 74a is the simplest, but even here a series of short openwork lines furnishes a neat design; Fig. 74b is a more elaborate one which to this point consists of alternate bands of the two lace coils; Fig. 74c presents a design which radiates with already quite a bit of the evolving pattern to be seen.

The simplest kiaha design represented is Fig. 78b, where the lace covering is broken by four vertical shafts extending from the apex to the rim, thus dividing it into four sections. The shafts taper toward the top from a beginning of eleven plain loopings at the base to four loops at the rim.

They are edged on either side by a band of twisted lace coil, a second band of the plain coil, and a third of the twisted coil, and these three continue across the apex to form four large triangular spaces between the shafts. These triangular quarter sections are crossed by three rows of smaller triangles of plain lace coil, outlined by the twisted coil. Color is introduced on the open bands which outline the quarter sections, first red and then blue; and on the horizontal bands which divide the rows of small triangles by red, blue, and then red; and on the oblique of the smaller triangles blue and then red. A child's kiaha of similar pattern, but much simpler, shows two circling bands of triangles without the dividing shafts, with the lower triangles edged with blue and the upper triangles with red.

Slightly more complicated is the pattern of Fig. 78a, where the four shafts as before divide the lace cover. These are edged with six alternating bands of the plain and twisted lace coil which continue across the apex to form the quarter sections, although here not of triangular shape as before, but quadrilateral with a short base line and a longer top. Within this quadrilateral extend oblique bands of alternating plain and twisted coil so painted in a very dark blue and red as to distribute the colors evenly over this chaste but effective design.

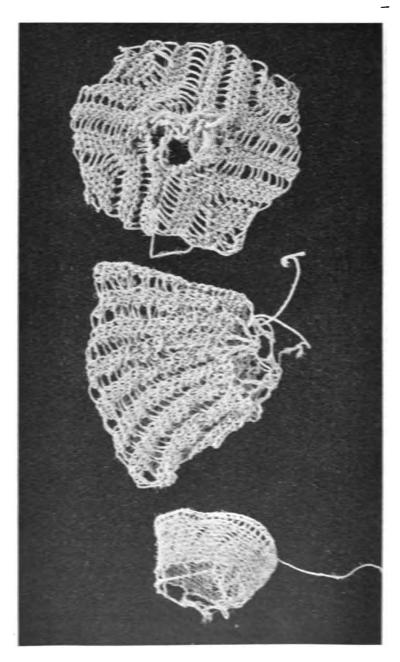
A simple design is represented by Fig. 75b, where the short broadly tapering shafts continue but part way up the covering and are outlined by the two varieties of lace coil in such a manner as to move in zigzag pattern about the kiaha. A shorter shaft is dropped from the rim to fill in the space left vacant by the dip of the zigzag, while color is introduced in the usual alternating lines thus accenting the zigzags.

Another pleasing design, illustrated in Fig. 77b, also has shafts that do not continue to the rim, with the same manner of outlining them as well, and in these remind slightly of the last kiaha pattern. The shafts, however, are slender and remain of uniform width their entire length. Between them are grouped parallel horizontal bands of the two lace coils, with a short dip at either end. Color added in alternating red and blue bands completes this well balanced design.

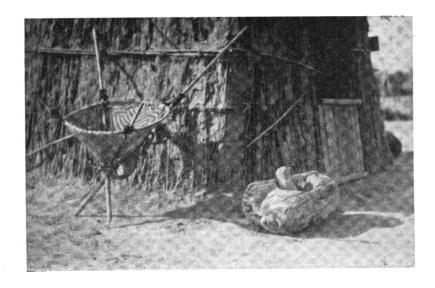
Figs. 75a and 76a are quite similar in design, but differ in the closeness of texture since Fig. 75a is a better made lace coiling. The two halves of the design within the quarter section balance, for the shaft dropped from the rim in spear shape is so outlined as to produce forms quite like the old-fashioned sawhorse, whose open bands are painted alternately blue and red.

Fig. 76b is also a balanced design and planned on somewhat similar lines to the last two, for the dropped arrow-shaped shafts extending from the rim are outlined by alternating bands of the two lace coils, but so as to form a different figure with a medallion center in appearance, which in reality, however, is a fret motif.





Pig 74 (60 t atau, atat, azit) - Kishs Heginnings, Papago



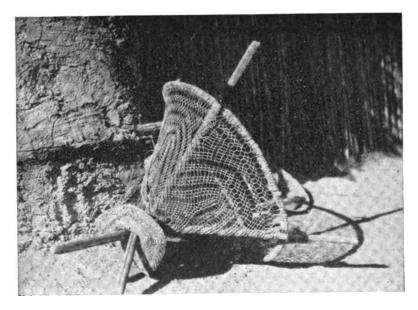


Fig. 75. Kiahas, Papago.

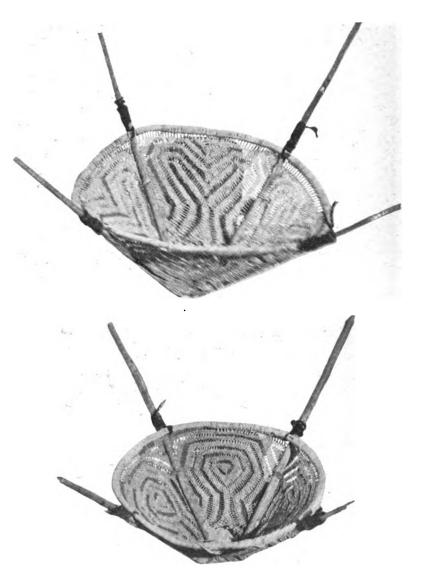


Fig. 76. Kiahas, Papago.



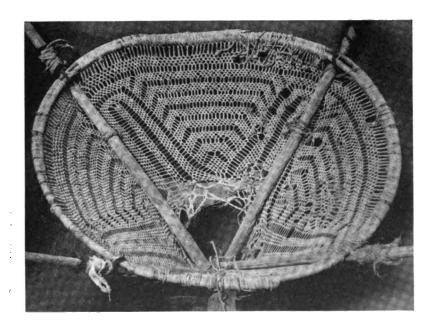
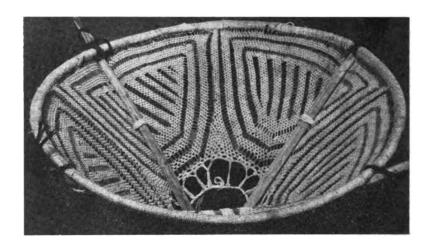


Fig. 77 (50.1-4645, 5326). Kiahas, Papago.



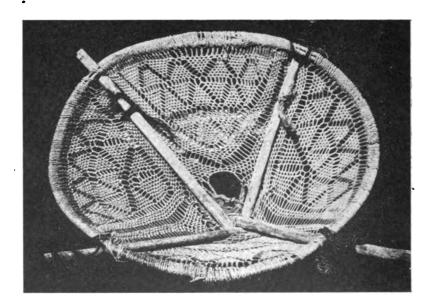
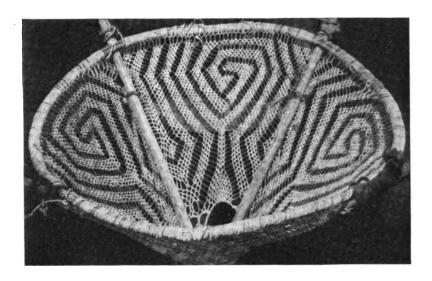
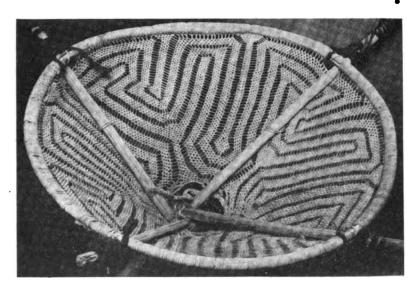


Fig. 78 (50.1-5319, 4529a). Kiahas.



а



D Fig. 79 (50.1-5333, 5320). Kiahas: a, Papago; b, Pimå.













Another seemingly balanced design is that of Fig. 77a with the outlining bands of the shaft so turning and winding as to form a slightly similar design to Fig. 76a, although not so carefully and effectively planned or executed. In reality, it is constructed of eight meandering double lines of the two lace coils, four short ones which pass over a quarter of the circumference, and four long ones which cover half of the circumference. These, with an added short oblique dropped from the rim circle, complete the design.

A closer meander, but not one of broken bands like the last, is the design in Fig. 79a, b, constructed of three continuous double bands, three close bands of plain lace coil with three accompanying openwork bands of twisted coil, which outline the long shaft extending from the rim before doubling upon themselves to form a triangular fret. Color is added to these last two designs in the usual manner.

EVOLUTION OF TECHNICS.

Many ethnologists claim that basketry was one of the earliest arts among primitive peoples, since grasses, roots, and twigs could be easily interlaced and twined into simple receptacles. As to the age of the art among the Papago and Pima nothing definite was gleaned, either of the simpler and what appear to be the older types of basketry, or the more complicated. That "basketry was introduced among the Pima one hundred years ago by the Maricopa" is the statement Mason makes in 1902, in reference to the coiled basketry of the Pima. Other reports from old settlers in the Papago villages of the Quijotoa Mountains and the Santa Rosa Valley, the very heart of the present day coiled basketry industry, state that very excellent baskets were made twenty-five years ago, but fewer baskets than now, since at that time they were constructed for Papago use only and not for sale, while now popular demand has resulted in an active trade in them. Papago coiled ware of twenty-five years ago was more carefully made than that today, since much of it was water-tight, at times serving as basket buckets for drawing water from the well, and as vessels for watering stock. Even up to the last few years basket bowls for watering horses on the journey, were strapped to the saddle and these, together with the older long bottleshaped basket olla, used in pairs, hung from either side of the horse, made journeying on the desert less dangerous. The custom of burning at death the belongings of the deceased, has deprived the world of many Papago and Pima baskets. Good luck favored at this time the find-

¹ Mason, O. T., "Aboriginal American Basketry" Nat. Mus. Rept., 1902, 519.

ing of one old basket, for by mere chance a discarded bowl much the worse for wear, was discovered resting on a refuse heap back of an Indian hut in Quijotoa. On the morning when this old fragment was rescued from the rubbish heap, the prize of the expedition was secured, for it had been made by a woman long gone, whose great, great grandchildren, aged three and five, were sitting before the hut together with relatives of three other generations of the basket maker, the oldest member of the group being a very aged woman. From this old basket we know exactly what degree of perfection the art of coiling had reached at the time it was made, and it records the stage of coiled basketry five generations ago, both as to technic and design. The art at that time was advanced, for it had indeed reached a high degree of perfection and elaboration (Fig. 61). The technic is even and water-tight as attested by the stitches near the edge of the rim for securing the leather thong by which it was suspended from the saddle, announcing that this aged bowl did service on journeys for the holding of The design is a two band fret of complicated pattern, and as handsome a Papago design as the writer has ever seen.

One point of interest connected with the age of coiled basketry is brought up by the small plaited center or beginning. Coiled ware of most tribes is begun by bunching together a bit of basket material, and turning it to make a small ring, and then binding it, and the coiling worked into this ring. Here the small center is plaited, which raises the question, Is this the result of plaiting being the older technic, and was this small plaited center borrowed from the earlier technic?

Leaving the age of the different Papago-Pima basketry technics, until further information gives more light on the subject, we will pass to a discussion on the possible evolution of two technics in the area, which to all appearances have passed from a simpler to a more complex form. It is unnecessary at this time, to expand upon the wonderful inventive faculty possessed by man of lower culture, as displayed in the development of his handiwork. That has already been vividly pictured in the introductory chapter of "Origins of Invention." Nevertheless, with each new instance of his skill and creative power, one marvels anew, and so here, one wonders not only at the surprising dexterity of these Indian women, but also at their mental activity in thinking out these technics, for which they need, what they seem to possess,—well-developed perceptive faculties and a remarkable "scholarship of the senses." Two technics in the region are found in two successive stages, lattice wrapped weave and foundation coil, that appear to connect up in a varying series either of progression or retrogression,



¹ Mason, O. T., "Origins of Invention."

although no positive proof has been found that they have evolved, or declined here.

The simplest, and in all probability the earliest technic in the region is wrapped weaving, a basketry construction very near to fundamental needs, when wants were primitive and the demand for objects to assist in the protection and storage of foods, etc., was paramount (see p. 140). Only remnants of this old basket technic are now to be found, as the crude wrapping of a pliable binding element over stiff slats, arranged in parallels, has almost entirely disappeared but a few old doors for huts and storage; houses, crude cages for live birds and small animals, hanging shelves for preserving food from marauding beasts, and cradles for the infant, are still to be seen in the out-of-the-way villages, where people have held to this early mode of construction. Wrapped weaving seems the simplest way of uniting stiff slat-like strips by means of a soft pliable binding element, and the impossibility of constructing wicker and twined weaving with these materials (see p. 134) must naturally have led these people to this third type of weaving for heavy structures, since nothing but wrapping could be done to unite the unwieldy material at hand. This is accomplished by one of two methods, a plain wrapping, and a latticed wrapping, giving two varieties of the technic in this region, both of which, however, are becoming extinct (Figs. 1-10).

The crudest form of the simple variety constructs the native hair brush (Fig. 8), an article common to many American tribes and made of numerous materials including roots, stems, and leaves of various plants which are tied, knotted, or woven together in a number of technics with a binding element of fiber, fiber cord, or just a strip of cloth, or leather. The technic here is most elementary, merely wrapping and then fastening a bunch of grass, roots, or fiber, at times roughly, at others, more skilfully. A step in advance is the more perfect wrapping found on larger forms, such as doors and sieves, where the technic has developed and taken such form as to be dignified as basketry wrapped weave, since the rods, or slats, act as separate warp elements, laid in a parallel series, and wrapped singly by the binding element, or weft (Fig. 1).

Moving on from the simple wrapped weaving to a second technic, which apparently is found here in two stages of development, we come to a more elaborate type, lattice wrapped weaving (see p. 141), which exhibits an interesting advance, ostensibly conceived through the uniting of the principles involved in simple wrapped weave and in a crude knotting employed over latticed elements in house construction. The walls of Papago and Pima grass huts are built of a parallel series of rods, or stems, placed vertically and crossed at right angles by horizontal parallels placed both on the outside

and inside at short distances apart. These are tied or knotted together at intervals by a fresh young willow twig while green and with its leaves still on, or by a leaf of the Spanish bayonet beaten slightly to soften it, that it may be more pliable and tie easily (Fig. 9). Lattice wrapped weaving adopts the latticed elements of house construction, and the uniting agent of wrapped weave.

The second technic which appears to have evolved in the region is foundation coiling, represented in two different stages by two distinct coils, an undeveloped variety (Figs. 27, 28), and a fully developed one (Figs. 34, 59-66). Foundation coil in its simplest stage is so rough in appearance that one wonders what this brush-like structure can be, as it seems but a tangle of stems which might possibly have grown so (Fig. 27). But this mass of twigs with so unprepossessing an aspect has a definite method of construction which forms a crude coiled ware, the simplest basket work coiling now known (see p. 172). The technic is most elementary, for it is built of one element which supplies the functions of the two elements in fully developed foundation coil, a foundation and a binder. It is unique how the serving of two distinct functions is accomplished by the one element composed of separate twigs, which, however, does not construct a strong, or a durable structure, but one which must be made new each year. It could not possibly be strong as there is no true foundation, and the single element is also engaged in the uniting process; neither is there a true binding element as it must serve also as a supporting layer; and also it is only loosely secured by the two extremities of the twig, the stem end and the leaf end which twist about the last twig of the round in process, without entering the previous round other than a loose thrust into it. Still, it is astonishing how well the basket granary which it builds hangs together even for a year of service. Its one element, like all coiled ware, moves in a continuous spiral from base to rim, but unlike other coil it has its double function to perform, that of acting as a foundation, and also as a binder in uniting its own adjacent rounds, and as has been shown, it does this uniting in the unique manner just described.

A decided step in advance in foundation coiling, is its second stage of evolution, for fully developed coil is composed of two distinct elements with separate functions: a foundation with a duty of its own in furnishing the groundwork, and a binding element with work of its own to perform in joining together the groundwork. Fully developed coil, like crude coil, is built in a continuous spiral with its adjacent rounds, or segments, united into a solid surface; but in contrast its two elements work separately, although jointly, and so form a firmer, smoother, closer, and more durable structure (Figs. 34–35, 59–66), than did coiling of one element. Foundation



coil of two elements is seen in this region in two degrees of finish: in a coarse open technic on granaries (see p. 179), and in a more refined and closer technic on trays and bowls (see p. 179). Both Papago and Pima construct their technics in the easiest and most natural way, crude coiling of one element clockwise, and coiling of two elements counter-clockwise, when due consideration is given as to the side desired for the outer, or smooth surface, which with the general run of bowls is the outside, and with trays, the inside. A seeming exception to the counter-clockwise movement of foundation coil when building large coarse granaries as seen in Fig. 39, is cleared up by noting that the basket is entirely worked from the inside.

The natural order of growth has been assumed in this description, an orderly progression in the "unfolding of the arts of life" as one would naturally expect, from the simple to the complex, the crude to the more refined. It seems normal to assume this, and there is no reason now known why crude coiling should not have found early expression among the villages in the vicinity of the streams along which arrowbush grows, or that this early form of crude coiling might not later have led to the highly specialized, perfected coil. Neither is there any ground to dispute why crude wrapping, such as we now find on hair brushes and knotting on house structures, should not precede the more highly developed wrapped weave and lattice wrapped weave. Still it is quite possible that the perfected technics were present first, and that instead of successive stages of advance, that there were successive steps not of deterioration, but of simplification of methods to fit certain needs. To instance, crude coil may have appeared late among the Pima, in response to a need for large granaries in which to store the crops when there was not present sufficient pliable material for foundation coil of two elements, and that this led to a further search for material and the discovery that twigs of arrowbush could be used in this way. No matter what its origin may be, the fact that it has survived to this day, side by side with a more perfect coiling is partly due, no doubt, to its great practical value as a speedily constructed technic of great use.

A further change has come to the coiled basketry of these tribes which must be recorded, a gradual modification effected by the arrival of civilization, which destines that in the near future there will be a widespread knowledge of a different style of coiled basketry from that which has been described in this report. It has already wrought many diversifications, for civilization is fast changing Indian customs, and old methods are fast disappearing, so that these innovations which are incidents in the history of culture must receive attention. In response to new conditions and the call for baskets to suit the needs of civilized man, the Pima have furnished many new shapes

large and small, foreign to the Indian, and the market is flooded with waste-paper baskets, sewing-baskets and many others whose design is treated above (p. 224). The Papago have also responded to the call, but not as the Pima, for their limited supply of material would not permit it. Their problem was not alone that of furnishing new shapes, but of finding a new basket material. Yucca has supplied the need, so that curio shops are full of Papago baskets of yucca, mostly small and of numerous shapes.

DIFFERENCES BETWEEN PAPAGO AND PIMA COILED BASKETRY.

Distinctive differences between the coiled basketry of the linguistically related Pima and Papago tribes has not to my knowledge been previously noted, or if so, there is no record of such in print. The terms "Pima basketry," and "Papago basketry," seem to be used interchangeably by most anthropologists and collectors, as covering one group of coiled ware with the conventional black fret designs. Even in our museums it is not unusual to find cases bearing the label "Pima and Papago basketry," in which are assembled indiscriminately, coiled ware from both tribes. In many instances these cases contain few if any Papago baskets, since collectors have secured their material from small dealers, who do not know the Papago basket, or if they have obtained them on a "from hut to hut canvas" among Papago villages, they have neglected to inquire as to the maker of each basket, else they would have detected that side by side in these huts is coiled ware from both tribes. That this should have escaped the investigator is not strange, since a hasty inspection would not reveal that desert conditions had been agents of Indian trade, and that an extensive traffic had brought many Pima basket trays and bowls to the Papago, who style them "baskets from the other country." Scarcity of basket material for making their own coiled ware demanded trading either in the raw material. or the finished basket and in many cases the last was found preferable. When this mingling of coiled ware from both tribes was first perceived in Papagueria, and when it was noted that a distinct designation, "baskets from the other country," was given to Pima baskets, a careful study was immediately begun of all coiled ware in use in and about the Papago huts. with special reference to differences which might exist. A diversity proved to be the case, for a marked differentiation was found between the baskets of the two tribes. The discovery of a variance remained for an intensive study of their textile arts, research which showed without a doubt, that the coiled basketry of each tribe has distinguishing characteristics, each a distinct place of its own among that of other basket-making peoples of lower



culture. These facts of difference which were obtained with persevering inquiry are the subject of this chapter, but their discussion will exclude the newer baskets made for sale (see p. 224).

Coiling is the basketry technic by which these people are known, for "Pima and Papago basketry" means to the world their light colored trays and bowls with the black fret designs. That coiling should be thus singled out to receive this distinction is not strange since it is their most elaborate technic. The quality of the materials employed in its manufacture; their painstaking gathering and preparation; the fineness, closeness, and perfection of workmanship in its construction receive only just recognition in giving this technic first place in their basketry. So it is the technic best suited to be chosen by these people upon which to devote their leisure time in perfecting and decorating. It was a technic upon which to impress individuality; hence, the importance of the difference in Papago and Pima coiled basketry as a possible factor in the cultural differentiation of these tribes.

To fully appreciate certain qualities in the Papago and Pima coiled ware a hasty survey of the two habitats (p. 127) will be helpful, since environment is one factor, and a strong one, in occasioning dissimilarity (p. 139). Papago in their foothill villages are surrounded by a harsh, dry, spiny vegetation which has made use of innumerable means for preserving moisture, enlarging stems and leaves for the storage of water, coating the plant surface, and shrinking leaves to small size, to spines, and to nothingness to prevent evaporation, all to little avail, since plant life has so slight an amount of moisture and flexibility that but one suitable binding material for coiled ware is present, the black martynia. The Pima along the few desert streams which furnish a scattering of willow and cottonwood, use these materials for their coiled ware in preference to martynia which also grows in the region, since splints from the willow and cottonwood twigs are more easily prepared than are splints from martynia pod-hooks. So the Pima make a basket of willow or cottonwood, only using martynia for the design while the Papago very frequently make a basket of martynia with willow design. When the basket is of willow, the design is woven in an exceptionally heavy pattern of martynia. The relation to the environment is here felt since the supply of martynia gives Papago baskets a dominance of dark over light, as the Papago with a minor exception, must procure their binding material from elsewhere; while the supply of willow and cottonwood give Pima baskets a dominance of light over dark for the reason given above (see p. 139). Another difference partially dependent upon environment is that of build, which results from a diversity in foundation materials: the Papago have the harsh beargrass which builds a stiff unyielding structure, but one

of great durability, because of the strength of beargrass; the Pima are provided with the softer cat-tail which builds a more pliable, but less durable basket (see pp. 139 and 195).

Aside from dissimilarity in dark and light, and in qualities of build which seem dependent upon environmental influences, the coiled ware of the tribes shows marked variance in shape, as discerned in the outlines of Papago bowls and trays in Fig. 44 and those of the Pima in the same figure. The bowls differ most conspicuously as the Papago take on a more or less globular shape; the forms are broader in proportion, that is, their width exceeds their height to a greater degree than the Pima; the wall is more nearly perpendicular without the great spread of the Pima; the base is broad and flat; the outline curves rounding, all adding to the general substantial appearance (Figs. 44, 59a, d). Pima bowls are more bell-shaped; the forms of greater height and more slender proportion; the walls more oblique, the rim extending far out beyond the supporting base; the base small and rounding; and the outline curves oval and upspringing (Figs. 44, 63a, and The trays show the same contrast as to form, but in a less degree, since the low tray form restricts variation. Papago trays when compared with Pima are slightly deeper in proportion to width, the slant of the wall, although oblique, is at a narrower angle owing to the broader, flatter base, while the outline is less likely to be in double curves (Fig. 44).

Could we handle these baskets we would find diverse qualities in build not yet accounted for. Papago ware, especially the bowls, is thicker in wall (Figs. 59b and 65c), more firm and hard, owing to a tighter drawing of the binding element (Fig. 59b), and more irregular in the segments of the binder (Figs. 59a and 61), than are the coiled baskets of the Pima whose walls are thinner (Fig. 65a) and more smooth and even (Figs. 63 and 65).

Comparing the coiled ware of the two tribes for aesthetic differences one is first impressed by the strong feeling for large masses of dark and light on Papago baskets (Figs. 59a, b, d, f, 62c, 64a, b), and a feeling for line on the Pima, which is expressed in a network of black. The massing of dark and light on the Papago ware is produced in a number of ways: by the grouping of lines as in Figs. 59b, c, d, e; or by a greater width of the design line as in Figs. 59f, 61, 64a, b; or by dark spottings as in Figs. 59b, d, 62c, and 65c. The thin line tracery on the Pima baskets is effected by the use of narrower and more elaborate design lines than commonly found on Papago baskets, as seen in Figs. 63 and 66d, e, f, and when spottings occur as in Figs. 60c, 63, 64d, and 65d, e, f, they are smaller, adding a dramatic note to the pattern as the bits of dark sparkle amidst the intricate traceries, quite in contrast to the more dignified massing of darks by the Papago. A second impression received from these baskets is that the Papago deals mostly



with horizontal line which give a restful stable quality to the design (Fig. 59). While it is true the Pima uses the horizontal line it is only in a secondary way, for it is held in subservience to a more dominant motif, an active one, the spiral, or the whorl (Figs. 63 and 65). Even many of the rosette patterns, which appear to lack the active note as they are not spirally built, have a strong feeling of motion caused by a breaking by oblique lines (Fig. 66e, f).

On searching for differences as exhibited in pattern we find the Papago have a number of distinct types including the following: the encircling fret (Figs. 61 and 64a, b); the horizontal band in several arrangements (Figs. 59 and 62b, c); and the vertical fret (Fig. 60a, b). The Pima also have a number of types including: the fret which is quite unlike that of the Papago (Figs. 60c and 64d, e); the rectangular whorl (Figs. 62d, e, f and 63a, b, c); the triangular whorl (Figs. 63d, e, f, 64d, 65a, b); the spiral (Figs. 60e, 64c, and 65d, e, f); and the rosette (Figs. 64f, 66). Still because pronounced differences have been found in the patterns of the tribes, it does not mean that it is always an easy matter to differentiate, since the designs of the two have become mingled and exchanged, and one finds Pima designs on Papago baskets and likewise Papago design on Pima baskets. Hence, it is frequently difficult to discriminate; still by taking the older baskets of each tribe and noting the exclusions, one gets a working basis upon which to build and also to weed out.

Following the distinct types of each tribe further, watching also the manner in which the two differences, light and dark, and line activity evolve, let us scrutinize more particularly, first examples of Papago design and then of Pima. In addition to Papago plain black baskets, which are mostly bowls, and are still found in the outlying districts, are black bowls with the simplest form of Papago design, broken bands arranged in parallel horizontals (Fig. 59a). These parallel series of horizontals may be connected with parallel obliques as in Fig. 59d, a design which shows considerable variance both in the length of the horizontals and in the length and width of the obliques, but in almost every case, as here, the black overbalances the light. A third arrangement of parallel horizontals and a vertical grouping, as was the last, is connected by parallel verticals, whose uniting may form the more usual simple rectangular zigzag of Fig. 59b, or the less usual enclosed rectangular shape of Fig. 65c. In the first case the lines of the design are frequently of varying widths as in Fig. 59b, in the second, they are more usually of the same widths; but in almost every instance the design is light on a dark ground. A fourth vertical grouping of parallel horizontals is united into separate clusters by means of small triangles (Fig. 59e, f). This design possibly is not Papago as it differs in many ways from other

designs of the tribe, but I am not prepared to say it is Pima. A fifth variation in this grouping of parallel horizontals or, in reality a variation of the third grouping (Fig. 62b, c), with rectangular spottings introduced at the union of the perpendicular elements, suggesting Pima influence (Fig. 66c), and another grouping of these same lines and rectangles gives the pattern found in Fig. 66b. One of the most interesting Papago designs is the vertical fret (Fig. 60a), seen here in its simplest form. The different variations of this motif suggest a play with the long unbroken serpentine line as it doubles and quadruples upon itself in its more elaborate varieties, although it never crosses itself and keeps a line of uniform width throughout, together with one of equal spacing. Here the design is fivefold, elaborate arrangements are more usually fourfold.

Of Pima pattern the fret is probably the oldest and most common design. This motif used alone, is indifferently represented in the Museum collection, since fewer of this design are now to be found, but the student who wishes further study is referred to the 26th Report of the Bureau of American Ethnology, where material is illustrated which was collected at an earlier date when more typical Pima fret designs were to be had. The fret when unaccompanied by other design units is found in encircling bands, simple and elaborate, and in spiral arrangements. It also finds endless employment in union with other units of design, the rectangular and triangular whorl, the spiral and the cross, in single, double, and triple bands. bands may be uniform in width (Fig. 60d), or uneven (Fig. 63b), spotted at their turning with rectangular shapes (Fig. 60c), interrupted at points of intersection by crosses (Fig. 64d, e), and decorated with the terrace (Fig. 63a, b, c, e, f). The whorl, one of their most used patterns, consists of four central twirling rectangular arms with generally a repeating whorl of four rectangles at the rim (Fig. 62d). The arms vary in length and width, and the shape seldom holds to a true rectangle, but increases in width toward the rim in addition to the variation caused by the swing of the whorl (Figs. 62e, 63a). In the intervening space between the whorls is a fret of two or three bands whose lines are sometimes uniform in width (62d) but often of wider horizontals and lighter obliques (Fig. 63b). The obliques are quite frequently composed of a line of small triangles, forming what is called the "terrace" design. The points of the triangles of the terrace may turn toward the swing of the whorl, or away from it. The triangular whorl, another much-used Pima pattern, consists of three, four, or five twirling triangular arms extending from the base, with a repeating number of triangular forms extending from the rim (Figs. 63f and 65a, b), but here the forms at the rim may hold to the size of those at the center (Fig. 63f), or be much enlarged (Fig. 65a, b). These rim shapes at times may repre-



sent the seed pod of the martynia (Fig. 65a, b) when the design unit is called "martynia." The proportions and the contour of the center triangular whorls vary even more than the rectangular whorls while the intervening fret takes on a multitude of variations from the very simple (Fig. 63f) to the very elaborate (Figs. 63e and 65a, b). The lines composing the bands of frets may vary in width as in Fig. 63e, or be more uniform as in Fig. 63f, while their obliques may be plain or terraced (Fig. 65a and 63e, f). The spiral design of the Pima may be constructed of a number of simple zigzags composed of two elements, a long horizontal and a short vertical or oblique (Fig. 60f), which here is on a Papago bowl, but generally the spiral is decorated at the steps of the zigzag by some small unit of design (Fig. 60e), frequently one or two small squares (Fig. 65d, e, f). The spiral is also combined with the scroll (Fig. 64c). Another Pima pattern and one which is generally thought to be recent is the rosette which appears in several varieties, two of which are seen here, a more floral form (Fig. 66e, f) and one composed of rectangular zigzags and black rectangular spottings (Fig. 66a, b, c). One of the very oldest patterns of this tribe suggests, to a slight degree, a rosette, but more carefully described, it is a maltese cross and hourglass pattern (Fig. 64f). Another very old basket with similar pattern is in the National Museum. The design is so different from others of the Pima that it is to be hoped further research concerning it will be undertaken.

Summing up differences in the pattern of the tribes we find that Papago design is dignified and reserved, while the Pima is full of action and grace; that in handling the Papago is simple, strong, direct whereas the Pima is elaborate, delicate, intricate; that in appearance the Papago design shows a feeling for large masses of dark and light, but the Pima a feeling for line expressed in a network of pattern with small spottings in black; that in technic the Papago make a crude irregular line, while the Pima line is clearcut and perfect in craftsmanship. In units of design both tribes have the encircling fret but handled in two entirely distinct manners, the Papago have the broken horizontal band effects and the vertical fret while the Pima have the rectangular and triangular whorls, the spiral, and the rosette. Thus the pattern of the two tribes differs in movement, treatment, aspect, technical skill, and design motifs. These dissimilarities in design, together with those of material, build, proportion, contour, finish, and dark and light, obviously give distinct Papago and Pima coiled basketry.

TABULATED ANALYSIS OF DESIGNS.

The following description of figures illustrating coiled basketry, is arranged in the order suggested by the preceding study that it may assist further research in the subject. The designs grouped under Papago baskets are undoubtedly Papago, or in exceptional cases more Papago than Pima. The designs grouped under Pima baskets are likewise either undoubtedly Pima, or more Pima than Papago.

PAPAGO BASKETS.

Fig. 59a. A design of wide broken bands arranged horizontally on a black ground. A typical Papago design on a rounding bowl of substantial water-tight structure, said to be one hundred years old, from the Santa Rosa region. Entire black baskets frequently take this shape.

Fig. 59d. A second vertical grouping of parallel horizontals connected by parallel obliques on a black ground, design fourfold. A very old globular-shaped bowl of hard water-tight construction from the Santa Rosa region.

Fig. 59b. A third vertical grouping of parallel horizontals united by parallel verticals, on black ground. The design lines in this old pattern are typically Papago in their unevenness and irregularity moving about the bowl in a fourfold rectangular zigzag. A very old water-tight, board-like structure from Brownell.

Fig. 59c. A similar design to the last but three-fold, newer and less interesting. A water-tight tray almost too perfect in workmanship for Papago, but its design and width of design bands place it here, from Santa Rosa.

Fig. 65c. A similar design to Fig. 59b except in the movement of the horizontals which do not flow, but enclose four rectangular shapes, between which are black areas filled with "coyote tracks." A globular shaped bowl from Santa Rosa.

Fig. 59f. A fourth grouping of parallel horizontals united by verticals composed of lines of small triangles in heavy black lines on a light ground, producing a six-fold rosette-like pattern on this well made, but much used old tray from San Xavier.

Fig. 59e. A design similar to the last but in narrower bands of pattern, arranged in a fourfold wheel-like figure on this old water-tight, hard as a board, deep tray with thong saddle attachment, its locality, Covered Wells.

Fig. 62c. A design of the third grouping of parallel horizontals united by parallel verticals similar to Fig. 59b, but the added rectangular spottings at the union of the parallels show Pima influence, although in shape and in amount of dark this very large handsome old bowl from Ankon is Papago.

Fig. 62b. A different arrangement of the design lines of the last plate, which however in manner of enclosing shapes suggests Fig. 62c, although the rectangular spottings show Pima influence, as does also the workmanship on this large well-made, perfectly shaped bowl from Cohatk. One of the interesting problems for later research is this small central design unit "coyote tracks" and the rectangular spottings at the union of the design lines, which may be Papago, or Pima.



Fig. 62a. An all over pattern of "coyote tracks" design arranged spirally and sixfold, which in manner of distribution in a stepped spiral, and in technical skill, as well as in the small black center suggest Pima, but in spacing, amount of dark and quality of handling suggest Papago, on this newer and little used tray, whose design is frequently called "turtle."

Fig. 60a. Another grouping of short parallel horizontals so united by shorter verticals as to form upright frets, in this case fivefold. A most interesting old pattern with a number of more complicated variations effected by doubling and redoubling upon itself the long unbroken line of this simple design. This very old tray is from San Xavier. When more elaborate the pattern is usually fourfold and receives various names, "Juice falling from the Saguara fruit," "Trail of deer in woods," and "Tattoo marks on woman's face."

Fig. 60b. A modification of the last design in a fourfold pattern of wider frets with rectangular spottings which suggest Pima influence, as does the unusual skill in the workmanship on this newer tray from Quijotoa.

Fig. 64b. A splendid example of Papago treatment of the encircling fret in the simple direct handling of broad irregular design lines repeated nine times in the single band of white pattern on a black ground, as seen in this old dough tray.

Fig. 64a. An equally typical example of the Papago fret in two banded pattern with broad crudely irregular and unaccented design lines, fivefold on the inner band and eightfold on the outer, in black on a light ground.

Fig. 61. A superlative example of an elaborate Papago fret in two bands, whose broad uneven black design lines follow a complicated fret pattern, fivefold on the inner band and ninefold on the outer. A fragment five generations old, illustrating the degree of excellence to which Papago basketry had attained in design and workmanship through this old water-tight structure with its remnants of a thong suspension strap attached to this aged bowl from Quijotoa.

Fig. 60f. A pattern of seven black zigzags arranged spirally, quite possibly Pima in design when compared to e of this plate, a small hard, water-tight food tray of the medicineman of Santa Rosa, who eats and drinks from it when performing ceremonies or on trips for the sacred salt.

Fig. 63d. A Pima design with Papago handling in spacing and the crude irregular design lines, which form a fourfold pattern, on a deep globular bowl from Santa Rosa, typically Papago in shape and build.

Fig. 66d. A borrowed design of interlacing ovals on a globular incurving rimmed bowl which in shape, in build, and in the attached suspension thong is Papago, on a basket from Covered Wells.

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Fig. 60c. A fret design in two separate bands, accented at the turn by rectangular spottings, the wide inner band sixfold, the narrower outer band elevenfold, on a small well-worn tray from Cassa Blanco.

Fig. 60d. A fret design in one band with three connecting frets joined by a series of short verticals, on a small tray whose workmanship appears more like that of the Papago.

Fig. 64e. A fret, terrace and cross design in one band, with two interlacing frets, whose obliques are terraced, and whose points of intersection are combined with two small rectangular shapes to form a cross.

Fig. 64d. A fret, cross, and triangular whorl design in fourfold pattern with the three band fret interrupted by a double cross.

Fig. 62d. A simple rectangular whorl design in fourfold pattern, between whose four center arms and those of the rim run two intervening outlines forming a simple fret. One of the commonest Pima designs on this old well-worn tray from Cassa Blanco.

Fig. 62e. A more elaborate rectangular whorl design with four short central arms only, outlining which are four bands of simple fret, on a small shallow tray purchased at Santa Rosa.

Fig. 62f. A more elaborate rectangular whorl and "terrace" design, with four prominent center arms, repeated by four at the rim, between which run three bands of simple fret, whose oblique lines are edged on the inner side with small triangles, whose points turn with the swing of the whorl, the design termed "terrace." An old well-worn deep tray from Blackwater.

Fig. 63a. Another rectangular whorl and "terrace" design with the four long arms at the center and those at the rim joined to the two outlining frets, whose oblique lines are composed of small triangles turning in opposite directions back to back, an unusual arrangement. A large perfectly shaped and well constructed bowl.

Fig. 63b. A slender rectangular whorl and "terrace" design, with four plainedged center arms and four repeating rim arms edged on one side with triangles, while the two slender outlining bands of fret, thicker on the horizontals than on the obliques, are edged on the obliques by the terrace design, the points of whose triangles turn away from the swing of whorl. A fine large old shallow tray, yellow with age, from Sacaton Falls.

Fig. 63c. A heavier rectangular whorl and "terrace" design with the four center and rim arms joined to the two outlining frets whose obliques are small triangles with points turned away from the swing of the whorl. A large low tray, in good state of preservation, from Blackwater.

Fig. 63f. A triangular whorl and terrace design, here the triangular form replaces the rectangular, to whose four arms at center and rim are attached the horizontal bands of an elementary fret, with obliques composed of small triangles turned away from the swing of the whorl.

Fig. 63e. A complicated triangular whorl and terrace design, the ends of whose five center arms connect by means of an elaborate fret with five terraced figures extending from the rim, no doubt taking the place of the rim whorl, for from it extend the broad horizontals and delicate oblique lines of the fret, one of which is terraced. A large new well-made bowl.

Fig. 65a. A triangular whorl, fret, "terrace", and "coyote tracks" design of five simple arms at center and five at rim decorated with "coyote tracks," while two elaborate intervening frets, with oblique lines edged with triangles are so arranged as to form a figure of the martynia pod, giving the design the name "martynia." A valuable old tray, fine in workmanship, and one which has seen much service from Blackwater.

Fig. 65b. A similar design of the "martynia" but on a newer and coarser basket, which in technic suggests Papago work.

Fig. 64f. A maltese cross and hourglass pattern with four hourglass-shaped arms projecting from the center with four similar shapes indirectly suspended from rim, the two intervening zigzags follow the lines of the eight hourglass forms but with four breaks at the rim allowing four open paths half way down the wall. An exceptionally finely built very old bowl from Sacaton Flats.



Fig. 60e. A zigzag pattern in four spirals grouped with a small quadrilateral figure, composed of two vertical lines and a triangle, at each step of the spiral. A small tray from Blackwater.

Fig. 64c. A combined spiral and fret design which is eight-fold, each spiral supporting two frets in heavy horizontals and light obliques, with small triangular spottings.

Fig. 65d. A spiral pattern of double rectangles with connecting horizontals, in five stepped zigzags composed of two spirals each, interrupted by a group of two rectangles touching at diagonal corners. A deep old bowl yellow with age, much used but well preserved.

Fig. 65e. A pattern similar to the last, except in six stepped zigzags of three spirals each, interrupted by a group of two rectangles arranged in the letter Z, and placed more diagonally than the last, giving greater motion to design. A shallow old bowl in excellent condition.

Fig. 65f. A pattern similar to the last except in four stepped zigzags of four spirals each, arranged less diagonally. A newer tray shape. The last three designs are frequently termed "whirlwind."

Fig. 66a. One of a series of designs built on similar lines to the next two, and also upon those on the Papago bowl, Fig. 62c, here the shape of tray changes the vertical lines of bowl design to obliques and the interrupting squares nearest rim to wide oblongs. Large black center with four radiating arms, repeated at rim, and four encircling rectangular zigzags with verticals about three fourths the height of wall pattern, on this well-preserved old tray, yellow with age from Cassa Blanco, whose design is frequently called "squash blossom."

Fig. 66b. A similar design to the last but sixfold, the three encircling rectangular zigzags with verticals three-fourths the height of wall pattern, on this newer tray.

Fig. 66c. A similar design to the last two but sixfold, the five encircling rectangular zigzags, with short verticals one third the height of wall pattern, and interrupting squares which suggest the spiral bowl patterns on Fig. 65. Probably Papago make.

Fig. 66e. A design with six central radiating triangular shapes, re-echoed by twelve at rim, between five uniform outlining bands producing a flower-like appearance. A shallow, little-used bowl procured at Santa Rosa.

Fig. 66f. A design similar to the last, but fourfold, with a similar center and six outlining bands with heavy horizontals and lighter obliques producing a more elaborate rosette-like appearance. A shallow bowl, quite new, from Blackwater.

REFLECTION OF PERSONAL TRAITS.

The differences between Papago and Pima coiled basketry appear to tally with the traits of each tribe in a very singular manner. Significant as seemed the dependence of the basket technic upon the unusual vegetation of the region which has so curiously brought itself, through adaptation, into harmony with the arid environment; and the ingenuity of the Indian in the economic use of the scant resources at hand (see p. 139); of even greater interest and importance is the seeming reflection of physiological and psychological traits in their coiled ware. Thus suggesting that although

man's dependence upon natural resources is great, he can to a degree free himself from external relations, and so direct his activities as to express himself in his handiwork by adroit adaptation, and thus give it an impress of personality, in this case reflecting the traits of his tribe.

The Papago of the solitary foothills are a quiet, secretive, silent people. No visitor approaching their village hears laughter or loud talking, for the quiet of the solitude which has settled around their desert home has left its imprint upon the silent people. In this forbidding habitat, where conditions are so severe, one is not surprised to find a sedate, brave, persevering people, for the loneliness and severity of life in these scattered villages has called for courage, self-reliance, and fortitude to battle with adverse conditions.

In contrast to the characteristics of the Papago we find the Pima with quite a different personality, due in some degree, at least, to their less austere home surroundings along the few streams, and in environs which do not call forth the same strength and fortitude as demanded by Papagueria. So instead of the quiet, stable, character of the Papago, we find the Pima with a buoyant, joyous, social nature, and one which is most temperamental. The Pima are better known than the Papago, to the trader, the collector, the merchantman, and this has changed them greatly; still certain traits can never be altered or obliterated. In matters of neatness and cleanliness the Pima are far from thrifty as shown in the arrangement of hair and dress which indicate decidedly that they belong to an easygoing tribe. However, an artistic temperament seldom gives much thought to personal appearance, but if the negative side of this temperament is shown in Pima dress, its positive side finds vital expression in the expert craftsmanship and beauty of their handiwork.

Phenomenal as it appears, the steady, reserved, seldom-smiling Papago woman constructs the substantial, broad, flat-based, and at times crude form with thick, firm wall; while the light-hearted, temperamental, talkative Pima, living a social life makes the delicate, slender, lighter form with up-springing out-curving wall, of more artistic build and finish. But before discussing to what degree personal traits are responsible for these qualities, one must take cognizance of the fact that influence of personality is not the only controlling force to be accounted for. There are other agencies at work which have a decided effect upon this ware. Environment is one of the strongest of the forces, governing through supply, and lack of supply, the amount of dark and light on the baskets, as well as the degree of rigidity and pliability of build. Environment influences another quality, which came in response to certain needs demanded by the habitat; giving to one tribe a water-tight technic and excluding it from the other, and quite proba-



bly providing a water-holding shape to the one, and not granting it to the other. Function determines to a large degree items of shape and build, especially in bowls (see p. 191), as the broad flat base and globular form with incurving brim of the Papago bowl (Fig. 59a, d) is steadier and holds liquid better, a function not necessary to the small based, out-spreading walled bowl of the Pima (Figs. 63a and 65d); while the substantial build of the Papago has come no doubt in response to a need not found in the land of the Pima. So Papago baskets have an excess of dark, a greater rigidity, and frequently water-tight technic as well as a form suitable for liquids; while the Pima baskets have an excess of light, greater pliability, and not the technic and form fitted for the holding of liquids, because of the influence of environment.

Hence function and materials are strong competitors to the modifying agency of personality. Nevertheless, although much is due to these (see pp. 139 and 191), there are qualities of shape and build which cannot be attributed to these causes. The heavy, substantial, crude qualities of Papago baskets (Fig. 59) and the grace and beauty of those of the Pima (Figs. 63a and 65d), in all probability owe much to a divergence in the personal caliber of the tribes; to a stronger feeling for the fundamental things of life by the Papago, whose simplicity and strength emphasize qualities of utility in preference to beauty in outline or nicety of technical finish; and to a sensibility for the aesthetic by the Pima, whose artistic nature gives greater heed to subtleties of contour and perfection in craftsmanship. quality of durability, that is the length of a basket's usefulness — its life depends much upon material; nevertheless, a different handling of the binding element by the two tribes, a firm, tight drawing of the binder by the thrifty, painstaking Papago, and a slighter drawing of the same by the less strenuous Pima, attests no doubt to the effect of tribe modification. of the dominant differences in the coiled ware must be a personal expression of the temper and individuality of each tribe, since it is easily seen that it is the self-reliant, never-disturbed Papago woman, living within herself, who constructs not the delicate, light form, but the substantial broad, globular, and at times crude one, with firm, thick wall, while it is the buoyant, joyous Pima living an out-flowing life, who makes not the stout, solid structure. but the thin, less heavy form with up-springing, out-curving wall, of more artistic build and finish.

But it is in design where native powers dominate, although even here the environment is felt in the proportion of dark and light, a strong factor in design. Still to no influence of material or function can be traced the dominance of the horizontal line on the reposeful, stable, dignified Papago's basketry, or the dominance of the active line on the lively, buoyant, joyous

Pima's basketry; nor can a vestige of their control be seen in the heavy massing of large areas of dark and light, or in the simplicity and directness of Papago design; nor in the network of sparkling line, or the elaborateness of Pima design. For an explanation of these one must look elsewhere than to outside causes. Contrasting natural traits of these tribes are reflected in their coiled basketry.

KEY TO BASKETRY TECHNIC.

This key to basketry technic is given that the methods of basketry construction and terminology given in the preceding sections of the paper, may be better understood. The necessity for uniformity in classification and terminology is appreciated, that confusion be avoided and the reader be enabled more easily to follow.

The classification recognizes three kinds of basketry, plaited, woven, and coiled ware, the division being based upon their construction or building process, as the elements plait, weave, and coil. The fundamental process of the three distinct technics is easily discerned upon slight examination.

Plaiting constructs a mat-like surface by means of active elements only, which move over and under each other in regular order. No passive foundation elements are incorporated, neither are new elements added after the completion of the base, as those already furnished continue to plait the body of the basket.

Weaving is known by its upright warps extending from base to upper edge, as the surface is constructed on these passive warps, crossed by an active binding element, or weft. Two types of weaving, checked and twilled wicker, are less easily recognized because of the equal size of the warp and weft, but even here the distinct weft element added at the base may be traced encircling the basket.

Coiling can easily be distinguished by the spiral movement of its elements. This consists either of an active element, or of a passive element bound down by an accompanying active element.

The key approaches Mason's classification nearest at types of weaving, although here there are differences. Mason entirely excludes plaiting as a basketry process, while his types of coiled ware are based upon the components of the internal element, the foundation. The composition of the inner element is the last consideration, and a later division than is shown here.

BASKETRY TECHNIC.

I.	Plaiting of Crossed Active Elements.
	A. Parallel elements in two directions.
	1. Over and under one
	2. Over and under more than oneTwilled Plaiting
	B. Parallel elements in more than two direc-
	tionsLattice Plaiting
II.	Weaving of Active (weft) across Passive (warp) Elements.
	A. Parallel warps in one direction.
	1. Weft interlacedWicker Weave
	a. Warps coarser than weftWicker Weave
	b. Warps of same size as weft
	a'. Over and under one
	b'. Over and under more than one. Twilled Wicker Weave
	2. Weft twined.
	a. Weft of two strands.
	a'. Over one warpTwine Weave
	b'. Over two warpsTwilled Twine Weave
	b. Weft of three strands.
	a'. Plain weftThree-ply Twine Weave
	b'. Braided weftBraid Three-ply Twine Weave
	3. Weft wrapped Wrapped Weave
	B. Parallel warps in more than one direction.
	1. Weft interlacedLattice Wicker Weave
	2. Weft twined.
	a. Warps oblique Oblique Lattice Twine Weave
	b. Warps vertical and horizontalVertical Lattice Twine Weave
	3. Weft wrapped Lattice Wrapped Weave
III.	Coiling of Active Element or of Active along Passive Element.
	A. Active element only.
	1. Binder (weft) spiralLace Coil
	2. Binder twisting
	3. Binder interlacingInterlaced Lace Coil
	4. Binder knottingKnotted Lace Coil
	B. Joint active and passive element.
	1. Binding spirallyCrude Coil
	C. Active and passive elements.
	1. Binder (weft) spiralFoundation Coil
	2. Binder twistingTwisted Foundation Coil
	3. Binder interlacing Interlaced Foundation Coil
	4. Binder loopingLooped Foundation Coil

PAPAGO TERMINOLOGY.

Agave, aholta
Agave leaf, aholt
Arrowbush, schamtum
Awl, auvich (owl)
Basket, whoha
Beans, mone
Beargrass, mau
Blueing, schatuch
Bottle, vaco
Brush, washi
schoch

gorwecot Cat's claw, opot Cotton, thawke

Cottonwood, oupa Cradle, vol cut

Eagle feathers, ba och aoth

Feather, äoth

Greasewood, schi quoy

Gum on greasewood, o shop a gum

Hanging shelf, kochta

Headrings, hä co

Horsehair, cauveumoch

House, bitke (adobe)

washăke (grass) muchăke (ocatillo)

Knife, vinum

Maguey fiber, schoch Man, awtum (awl)

Martynia, ähōch

Mat, mine

Mat making, miuetha Medicine basket, washä

Mesquite, que

Mesquite bark, quiolituc

Metate, māchāte Needle, hoy abŭt Ocatilla, mu och Olla, hähä

Owl feather, chocut aoth

Palmea, omuch Peppers, cōō colt Pinole, chue; supi chue

Red dust, witch

Resting stick for kiaha, schalake

Rope twister, thadawin Saddle bags, hocho Saguaro, has che

Smaller grinding stone, velecot Sotol, (Yucca elata), tach ou we

Spanish bayonet, hovich Storage bin, vaschum String, hy

vechina (made of hay)

Turtle, comkchit

Turtle shell, comkchit ulituc

Willow, chirole

Willow bark, chrotolituc

Wheat, pelca

Wheat straw, pelecan wavok

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ANTHROPOLOGICAL PAPERS OF THE AMERICAN MUSEUM OF NATURAL HISTORY

Vol. XVIII

THE ARCHER M. HUNTINGTON SURVEY OF THE SOUTHWEST
ZUNI DISTRICT



NEW YORK
PUBLISHED BY ORDER OF THE TRUSTEES
1919

Director of Survey CLARK WISSLER

Contributors to this Volume
A. L. KROEBER
LESLIE SPIER



ONE BEDEING THE

ANTHROPOLOGICAL PAPERS

OF

THE AMERICAN MUSEUM OF NATURAL HISTORY

VOL. XVIII, PART I

ZUNI POTSHERDS

RV

A. L. KROEBER

NEW YORK
PUBLISHED BY ORDER OF THE TRUSTEES
1916

American Museum of Natural History.

PUBLICATIONS IN ANTHROPOLOGY.

In 1906 the present series of Anthropological Papers was authorized by the Trustees of the Museum to record the results of research conducted by the Department of Anthropology. The series comprises octavo volumes of about 350 pages each, issued in parts at irregular intervals. Previous to 1906 articles devoted to anthropological subjects appeared as occasional papers in the Bulletin and also in the Memoir series of the Museum. A complete list of these publications with prices will be furnished when requested. All communications should be addressed to the Librarian of the Museum.

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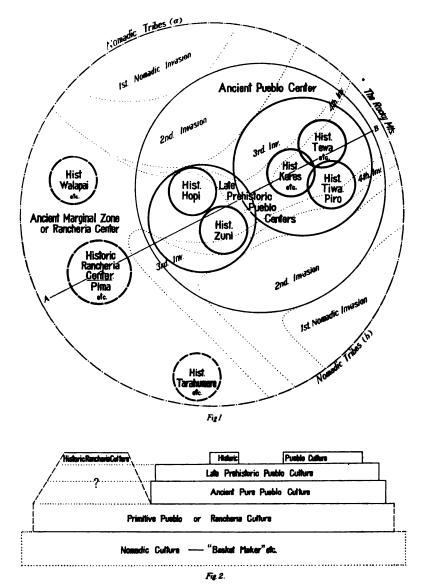
GENERAL INTRODUCTION

The Archer M. Huntington survey of southwestern United States was taken up at Mr. Huntington's suggestion in 1909 and has continued without interruption to the present. The fundamental objective of this investigation was the establishment of a chronology for the cultures of the Southwest. To this end, studies were made among the surviving natives as well as upon the remains of prehistoric peoples. At the outset it was assumed that the Rio Grande Valley was an important center of development for the historic type of Pueblo culture, and in consequence, the Rio Grande district was chosen as the primary base for field exploration. The surviving Pueblo villages of the district were intensively studied by Dr. Herbert J. Spinden and many of the abandoned and prehistoric villages were thoroughly investigated by Mr. N. C. Nelson. The results of the whole survey to date indicate that the initial assumption as to the location for the Pueblo center was wholly justifiable. Consequently, this district is still the major unit of the survey, and its satisfactory completion will require several more years of field study.

One of the secondary problems projected was a parallel study of the Zuñi Pueblo and the surrounding district. The first stage of this inquiry has been completed and is reported in this volume, which thus becomes the initial unit in the Huntington Survey series. Here also the living people were studied, then the ruined villages, and a correlation of the two developed.

The other secondary investigations may be enumerated for the sake of completeness. The nomadic peoples are under investigation by Dr. P. E. Goddard; the tribes of the higher plateaus north of the Colorado and the Hopi, by Dr. R. H. Lowie, and the prehistoric villages in the San Juan Area by Earl H. Morris. The last is an undertaking of great magnitude, dealing with a prehistoric culture center that laid the foundations for the later Pueblo development of the Rio Grande Valley. The results of these investigations will appear in later volumes, making a detailed statement of methods and results unnecessary here.

The Zuñi problem, the subject of this volume, can be stated in simple terms. The Zuñi were living on the present site when first described, but there are many adjacent ruins that seem to antedate the historic site. We must, therefore, seek the relation of one to the other. The solution then lies in developing a method by which the relative



Nelson's Diagrammatic Scheme for demonstrating the Geographical and Chronological Relations in the Cultures of the Southwest—(Proceedings of the National Academy of Sciences, 1919).

- Fig. 1. Geographical Position of Culture Centers.
- Fig. 2. Chronological Section on a Line a-b.

CHRONOLOGY OF THE ZUNI DISTRICT

Periods	Ceramic Characters	
8. Modern Zuñi (1680—)	Modern painted ware	
7. Historic Zuñi (1540-1680)	Historic painted ware Some glaze	
6. True pueblo architecture a. Moves to Zuñi (?-1540)	Buffware appears	
	Plain black	
5. True pueblo architecture a. Moves to Silver Creek (Holbrook)	Buffware and plain black begin here	
True pueblo architecture a. White Mountain Group b. Ramah Group becomes extinct	Glazed ware from Rio Grande	
3. Small pueblos a. White Mountain Group b. Ramah Group	Three-color painted Corrugated giving way to red Black-on-white constant	
2. Small rectangular houses	Corrugated, black-on-white, and black-on-red pottery	
1. Slab-house period	Corrugated pottery Black-on-white pottery	

CHRONOLOGICAL PERIODS IN THE SOUTHWEST

	Ceramic Periods for the Rio Grande and Colorado (Nelson)	Zuñi Chronology (Spier)
1680-	6. Modern painted ware	8. Modern Zuñi
1540-1680	5. Historic glazed ware	7. Historic Zuñi
?-1540	4. Full glazed ware	6. Early Zuñian (a ⁴)
Pueblo Period		5. Silver Creek (a³) Ramah now extinct
	3. Early glazed ware	4. White Mountain (a²) and Ramah (b²).
•		3. White Mountain (a) and Ramah (b)
	2. Full black-on-white ware	(,,
	(Aztec and Bonito)	
Transition		2. Rectangular house culture
Period	1b. Archaic black-on-white ware	1. Slab-house period culture
	1a. Basket Makers, Pottery absent	?
Nomadic Period	Primitive Nomads (?) Pottery and agriculture absent	?

ages of these ruins can be determined and correlated with Zuñi itself. The Zuñi of today represents the last stage in the historical evolution of one Southwestern culture; hence, the logical procedure seems to be to work backward from Zuñi through the ruins.

Work was begun at Zuñi in 1915 by A. L. Kroeber, Professor of Anthropology at the University of California. A careful study of the town was instituted, to find out just in how far the material growth of this primitive city was an expression of the culture of its people. presentation and discussion of this investigation forms the major paper in the volume. Professor Kroeber also examined the ruins and sought to form a tentative idea as to their relative ages by sampling the potsherds found in them and submitting these to statistical methods, the reliability of which had been tested in many sciences. With this as a beginning, Mr. Leslie Spier took up the specific dating of these ruins. The methods employed and the results obtained are presented under the proper heads; but we may summarize the conclusions by tabulating the chronology of the district, as in the accompanying table. It is thus apparent that the definite house remains of the district fall into eight successive periods, each of which seems to be an outgrowth of the others. The most definite index to this chronology is found in pottery forms and decoration, as is the case in many other parts of the world.

The establishment of this chronology is an important achievement and makes for progress, but obviously Zuñi did not work out its career in absolute isolation, for its growth was a mere part of the whole Pueblo development. Mr. N. C. Nelson also achieved a chronological scale for the Rio Grande district, which, in conjunction with the work of Mr. Earl H. Morris in the San Juan Valley, gives what appears to be the primary chronological sequence for Pueblo culture as a whole. Fortunately, the commendable independent work of Dr. A. V. Kidder in the mountains of Colorado and Utah, completes the story, so that the general outline of culture history for the Southwest now stands revealed. So by combining the tables of Nelson and Spier we get the time-relations expressed in the second tabulation.

Finally, as a synthetic presentation of the cultural relations in the Southwest Mr. Nelson has developed a diagrammatic chart, showing both the contemporaneous relations of the culture groups and their chronological origins. This diagram is based upon the well-known facts of culture distribution, and the observed tendencies for marginal cultures to present the more archaic forms and thus stand as indices of the



older culture level. As has been pointed out by many students of culture, once the center of a culture has been located, its earlier forms can be inferred from the surviving marginal traits. Thus, the Huntington Survey presents a conclusion as to the chronology of the Southwest that is fully consistent with the workings of culture in general, but is also based upon correlated and verifiable empirical observations. Not only were the horizontal correlations of Fig. 1 carefully determined by surface surveys, but typical sections (Fig. 2) were made to verify the chronological relations the surface indications suggested. Without such verification the results could not be taken with confidence.

The preceding tables and Nelson's diagrammatic scheme, which is but another method of presenting the same, give us a fairly complete outline of the development of culture in the Southwest, localizing some of the related centers of initiation and their diffusion areas as well as demonstrating their sequence. But relative chronologies are never satisfactory unless translated into terms of the calendar and it is quite right that an answer to the question "how long?" should be expected. There has been a great deal of confusion in the comprehension of New World culture due to the persistent shirking of anthropologists when confronted with this problem. It is therefore the duty of the writer, at least, to show in what way and with what precision the periods in these tables can be dated.

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There are a few historical facts that give us initial dates for the History in the Southwest begins with the Spanish exploration of the territory about 1540. Subsequent events give us other definite points, but for the remaining nine-tenths, or more, of the sequence presented in the table, we have no such time data. Yet, we do have sources from which these intervals can be estimated in terms of the known Nelson's diagram presents the steps from one culture to the next as if equal; but this is not his intention or belief. It is common historical knowledge that the evolution of culture and, in fact, all organic things, has been accelerating with time. The tabulation of a few epoch-making events in Old World culture with the dates assigned thereto makes this clear. Counting backward from the present century, we obtain the time intervals indicated in the adjoining table. From this it appears that it took much longer to pass from flint chipping to fire and again to painting, than from iron to steam power and the more recent inventions. Thus not only the presence of acceleration is made evident, but its rate of progression is indicated.

CHRONOLOGY OF GREAT EVENTS IN THE CULTURE OF THE OLD WORLD

	Yrs.
Use of steam power	200
Printing and gunpowder	1,000
Use of iron .	3,500
Use of bronze	6,000
Domestication of the ox and horse	10,000
Agriculture and pottery	12,000
Bows and arrows	14,000
Spear-thrower and the harpoon	20,000
Fine flint chipping	25,000
Beginning of painting and sculpture	35,000
Mortuary offerings	50,000
Use of fire and the coup de pong	100,000
Beginning of flint chipping	125,000
Precursors of man	500,000

A curve could be plotted to express this acceleration of culture's evolution, though not with mathematical exactness. the principle is there. Nelson's diagram gives us the relative geographical spread of the older and later ceramic traits for the whole Southwest, in which the same principle of culture acceleration is in evidence. Hence, it is possible to form an estimate of the respective time intervals that is more than a mere guess. From the diagram we see that the period of primitive Pueblo culture stands to the later period as about 3:2. The age of the later period can be estimated from the table where it appears that full-glazed ware dates back about four hundred years. On the basis of distribution, the interval to full black-on-white must be at least three times as long, or twelve hundred years. Sixteen hundred years is then the total interval, but the development period of primitive Pueblo cultures must have been still longer than the preceding, say, thirty-two hundred years. Then if we contemplate the rise of the basket makers, who first appear with the spear-thrower instead of the bow, how much longer must it have taken them to develop from nomads into potters, agriculturists, weavers, and initial pueblo dwellers? pologists in America are wont to look askance at anyone who assigns even a thousand years to the beginning of such cultures, but can they continue to shut their eyes to the universally observed principles of culture diffusion? Is not ten thousand years a modest estimate of the time since Cliff-Dweller culture began to differentiate from the nomad level? These are but the personal reflections of the writer but they are not in conflict with the empirical results of the Huntington Survey and are certainly consistent with the facts of Old World chronology. The spear-thrower, for example, appears here in the same relative chronological position as in western Europe, where twenty thousand years is assigned as the probable date.

In conclusion, this volume deals entirely with one specific locality in the vicinity of Zuñi, the presentation of field data from the same, together with the methods by which a chronology for these local cultures can be projected. This we hope will be an acceptable contribution to the subject. In this introductory statement we have shown the probable relation of this chronology to that for the whole of the Southwest and suggested the possibility of extending the horizon to a correlation with the chronology as a whole.

CLARK WISSLER

April, 1919.

ZUÑI POTSHERDS.

By A. L. Kroeber.

PREFACE.

This paper was written at Zuñi in the summer of 1915. Its materials are limited and its interpretations avowedly tentative. It was not feasible to extend the scope of the essay without undertaking work that circumstances rendered impossible at the time. Nor did the range and nature of the materials dealt with appear to warrant a subsequent recasting in the light of the available published investigations relating to the subject. The paper is therefore presented as written at the time and on the spot, except for a brief postscript dealing with the literature and certain comparative data.

February, 1916.

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ZUÑI POTSHERDS.

In the course of a study of family life made at the pueblo of Zuñi during the summer of 1915, I recorded the native names of a number of ancient villages in and near Zuñi Valley. A late afternoon walk a few days afterwards brought me to where Mattsakya once stood, a mile and a half east of the town of Zuñi. The wall outlines which Mindeleff still traced have mostly disappeared in thirty years, save for two rooms and where a prairie dog hole had laid bare a few feet of masonry that otherwise would have been hidden. The quantity of broken rock on the surface, the sharp rise of the knoll, and the maintained shrine, or rather two, on its summit—the last, as it proved, an almost certain evidence of former occupation of the spot—all however indicated a ruin even to the novice in archaeology. A few moments revealed a pottery fragment or two. At first the sherds were difficult to see and harder to distinguish from the numerous minute slabs of stone. A quarter of an hour, however, practised the eye; and the short time remaining before darkness sufficed to fill my pockets.

A few afternoons later, I went out in the opposite direction, toward Pinnawa, a mile or more to the west. Proceeding first to the northwestern edge of the present suburbs of the town to see the communal "scalp house," I noted another shrine or monument a few hundred feet to the north, directly in front of the government day school. This occupied the center of a slight rise, perhaps a yard above the surrounding plain and two hundred or more feet in diameter. The ground was strewn with small rounded and variously colored pebbles, such as do not occur in the fine red clay of the levels of Zuñi valley. In a few seconds sharp-edged fragments of flint or chert appeared, and then occasional bits of pottery. A passing Zuñi named the spot Shoptluwwayala; its shrine is connected with the yellow Sallimoppiya dance character. The pottery was not abundant; but a pocketful was secured.

I went westward, still on the north side of the broad bed of the Zuñi River, toward a knoll nearly a mile ahead, into which the stream had cut a vertical bank. The rise in the ground made me suspect an ancient site of human occupation. Again the smooth pebbles were conspicuous; and then bits of chipped rock and potsherds were seen lying here and there. Hattsinawa was the name the Zuñi gave me next morning. As at Shoptluwwayala, there was not a single building stone visible, nor anything that might have been a fragment of one; nor did the cut bank reveal any,

although pottery pieces lay on the surface to its edge. Another pocketful was the harvest.

I followed the river bed down a couple of hundred yards, and walked across the remnants of the stream — most of which was flowing through irrigation ditches into Zuñi fields — at Pinnawa. This site is the terminus of a long spur running from the southern hills to a low end at the river. Only a few steps from the stream there lay some broken rock of the type that litters Mattsakya but is wanting at Shoptluwwayala and Hattsinawa. Pottery at first was scant; but as I proceeded up the nose of the hill, the throw-out from every prairie dog hole was decorated by from one to half a dozen fragments. Toward the summit of the knoll and the inevitable shrine — only a few yards from the wagon road — both rock and potsherds lay thick, with chipped pebbles here and there. The site is also more extensive than either of the two preceding ones; and a few minutes sufficed for a larger haul.

It was immediately apparent that red, black, and patterned potsherds predominated here, as they seemed to have preponderated at Mattsakya, while white fragments had been in the majority at both Shoptluwwayala and Hattsinawa. I therefore attempted to pick up all sherds visible in certain spots, rather than range over the whole site and stoop only for the attractive ones. In this I may not have been altogether successful, for a red, a patterned, or a deep black fragment catches the eye more readily than either a "black" or a "white" one that ranges toward dull gray. But at least the endeavor was conscientious.

Next morning my finds were washed and dried — an unnecessary proceeding, I soon found — then sorted and counted. A tabulation thoroughly confirmed the mental impression of the evening before. At Mattsakya and Pinnawa, black or blackish pieces predominated; red ones were fairly numerous, white ones less so. At Shoptluwwayala and Hattsinawa, white predominated, and black and red were rare. The corrugated ware showed similarly: at Mattsakya and Pinnawa black sherds were as abundant as white, at the two other sites the black were lacking, the white frequent. The black corrugated ware usually runs to a dark or dull gray, the white is nearly always pale buff, pinkish, or light gray; but there were few doubtful pieces. There were other differences. At the "black and red" sites, a few three-colored sherds were found; at the white ones, none. former were extensive and heavily littered with good-sized rock fragments, as one would expect at a stone built ruin. The latter showed no rock, but a somewhat more sandy soil than prevails in most of the red clayey Zuñi plain, with some admixture of waterworn pebbles, scarcely any more than an inch in length, and of surprisingly diverse colors. The presence at Mattsakya and Pinnawa of one or two tiny bits of obsidian, which was unrepresented at Shoptluwwayala and Hattsinawa, was not altogether conclusive, on account of the small total yield of the two last named; but it seemed significant, as it does still. Finally, Mattsakya and Pinnawa had been previously mentioned to me by Zuñi informants as places inhabited in the *innote* or long ago. Shoptluwwayala and Hattsinawa were named only on designation and inquiry.

There could be no doubt that here, within a half hour's radius of the largest inhabited pueblo, were prehistoric remains of two types and two periods, as distinct as oil and water. The condition of the sites indicated the black and red ware ruins as the more recent; but certain misleading observations of the pottery in use in the Zuñi homes of today left me in doubt for a time. These observations rested upon fact, but the facts are due to the influence of American civilization, and would not have obtained a couple of generations ago. Once these circumstances were comprehended, the chronological priority of the white ware type became certain.

I recalled the surveys and excavations of many years ago, and a confused impression of a mass of sherds and similar uninspiring pieces obtained for the Hemenway Expedition under the direction of the memorable Cushing, sent in an exchange from the Peabody Museum to the University of California, and now stored there in a pile of trays. But an accumulation of dust and the familiar name Halona were all that emerged with distinct-I searched my mind for published reports of the work that must have been done in the region — vainly: if anything was in print, it had been forgotten in fifteen years during which my reading on the American Southwest had been desultory; and I was remote from bibliographies. Victor Mindeleff's study of Pueblo Architecture, for which I had sent in connection with researches into the clans and town growth of Zuñi itself, I found truly admirable, and it contained valuable plots and descriptions of ruins; but they did not touch on my problem. The final clinching was given by Hodge's most useful summary of the history of Cibola and Zuñi, included in that tremendous research which will always be fundamental to all studies of the Zuñi and which is the great labor of the life of Matilda Coxe Stevenson, who died far away while I was forming my first friendships with her old friends. In Hodge's meaty compendium I found that Mattsakva and perhaps Pinnawa were inhabited Zuñi villages in 1598, and in all likelihood when Coronado stormed Hawwikku in 1540, and that at least Mattsakya was a place of abode until the great revolt of 1680.

The fate of Mattsakya was also that of Kyakkima, a better preserved ruin nestling against the giant cliffs of Towwayallanna, four miles southeast of Ittiwawa, "the middle," as Zuñi is for the world, in the belief of its resi-

dents. The pottery of Kyakkima should accordingly be that of Mattsakya. It proved to be so. A hundred seconds on its débris settled the identity.

Not only, then, are there the type and period of white ware and the type and period of black and of red ware, but the latter is the more recent. It belongs in part to the time of early American history; the former is wholly prehistoric. I call the historic Type A, the prehistoric Type B, since further exploration or study may reveal another prehistoric Type C.

Pinnawa was revisited, and a larger collection of fragments brought home. Their relative numbers tallied as they should with the first lot, considering the chances of accident in such small series. Sherds continue some distance to the south of the wagon road that crosses the spur just south of the little summit of the site. My companion and I continued a quarter of a mile south, or southeasterly, up the gently sloping ridge to Tetlnatluw-wayala, a shrine of one of the war god twins. The shrine led me to believe in an underlie of ruin; and it was there. There was no shadow of doubt as to period: every sherd but one was white. Even the corroborating pebbles, and absence of building sandstone, did not fail. The pottery was not abundant on the surface and again the industry of the prairie dogs proved a boon.

We went on along the ridge, down a slight dip, across the deeply washed trail that the bearded gods tread as they file from the southwest into Zuñi in the evening of the first summer solstice dance, and up again to the next low summit, where I remembered seeing a piece of lava, perhaps from a thousand year old grinding slab, on an earlier walk dictated by want of exercise and before thoughts of archaeology entered my mind. The spot is perhaps an eighth of a mile from Tetlnatluwwayala. As nearly as the lieutenant governor could later follow my index from a Zuñi roof, he judged it to be Te'allatashshhanna; but he may have misjudged the direction of my finger, or meant a more distant place: I am not certain of the name. I could not find the lava; but a short distance to the west, and a little higher, was another shrine. The hillock was of loose white sand, wind deposited and in spots wind eroded, though mostly covered with vegetation. In one of the bare depressions, and over a small patch on the leeward slope, lay a handful of pottery fragments. Again all but one were white.

We rode to Kyakkima with the lieutenant governor. As we approached the trickle that issued from the spring at the foot of a recess in the cliffs, a whitish spot on the sandy soil caught my eye. I sensed a type B sherd; but the officer said Kyakkima lay ahead. We drank at the head of the spring; then crossed the streamlet and ascended the steep slope to the east. Here was Kyakkima, where some five hundred Zuñi once lived in a town of four levels. On the higher terraces the walls that Mindeleff plotted still

stand; half way down is the ever present shrine with the dry rotting prayer sticks from which the plumes have blown. The site is large, the pottery abundant, and much of it attractive. I filled one pocket with an average sample, in which dull black was picked up undiscriminatingly with striking black on red and black on yellow patterns. Then we hunted pretty pieces. To keep any of the collection in the open pockets of the only coat among us on the ride home, part of it had to be jettisoned. The plain black pieces were abandoned; but unless some wandering Zuñi sheep herder or traveler has in mild surprise brushed them from the large rock by the spring, they still lie on its surface, to verify my count of them, while the reader scans this page.

But the white spot was not forgotten, and before the horses were remounted a ramble over the slope west of the rivulet produced a couple of dozen sherds — two red, all the remainder whitish. As usual, building stone was not in evidence, but pebbles and boulders occurred through the sandy soil. There is no shrine; nor does there appear to be a Zuñi name for the exact spot. I have named it Kyakkima Sunnhakwi, Kyakkima West. It is not a site that suggests itself for habitation. Possibly it is only the outer fringe of a once larger settlement of period B of which the main portion is covered by the Kyakkima of period A.

It is unnecessary to continue the narrative. Other "ruins" subsequently visited conform to the two types; such data concerning them as were noted, are included in the tabulations and in the memoranda appended. It is observable that of the type B sites, Hattsinawa and one other show a fair proportion of red ware. They therefore belong to the end of age B, or possibly to the first dawnings of that later period which was still blooming in the sixteenth and seventeenth centuries of our era.

The white slip pottery of the prehistoric time in Zuñi Valley is clearly, in general, of the familiar Cliff-Dweller type. Even the black and white checker board ornamentation so familiar from museum and private collections, is represented. A deviation from the colorless grayish white of most Cliff-Dweller specimens to a light buff or yellowish or pinkish white in many of the Zuñi pieces, may be the result of a peculiarity of the local clay.

Careful explorers in Arizona have warned against too much weight being given to color when inferences are drawn. Yellow ware in a ruin may be more indicative of the chemical constitution of the soil than of a type of civilization. I am ready to subscribe to this caution as heartily as anyone. It does not apply to this study of Zuñi antiquity because every ruin touched lies within the same valley, because all those examined are within an hour's distance of the pueblo, and because at least two pairs of ruins of differing periods are only a quarter of a mile or less apart.

Zuñi pottery of 1915, which may be found in every household, is overwhelmingly a white or creamy yellowish white slip ware, patterned either with black or with black and red; but in the latter case, the areas of black exceed those of red. The reason for this prevalence of white surface is that the pottery in use is confined principally to two types: water jars, usually large but low; and great open bowls for bread kneading. Now and then may be seen a canteen of breast shape, also with black or black and red ornamentation; a high jar, of plain polished red, used both for storage and as a drum; and a water jar, usually small, with red inside and bottom the red being burned yellow other. There are some black cooking pots: I have seen a number with handles or knobs, none really corrugated. Most of them stand unused in interior storerooms; occasionally one is set on the hearth fire to parch or pop corn, more rarely to cook in. The Zuñi woman now cooks in a frying pan or in agate ware, and serves food either in this vessel or in a china dish or rectangular lava bowl. A hundred, perhaps twenty-five years ago, this was not the case; and I am confident that débris from the town streets of that time would have shown nearly the same proportion of blackish ware as occurs at Mattsakya and Kyakkima, simply because the native cook pots had not yet gone out of use before American made substitutes. A few holes dug a yard or two deep in the streets or fallen houses of Zuñi will confirm or disprove my prediction.

I now began to observe sherds around the town. In the course of an afternoon's survey on the housetops, I gathered as many pieces as I could carry without interfering with the work in hand. More than half were blackish, and at that I probably desisted sooner from trying to pry out of the hard baked clay obstinately imbedded pieces of this shade than gaily colored ones.

It seemed however that the prevalence of black on the roofs might be due to the blowing over of chimneys, which in former times were regularly, and now still often, made of cracked or broken cook pots. Stooping through the streets of the town was hardly calculated to enhance my standing in Zuñi, so I delegated the task to four children of my "family," who fell to the work with zeal, and I am confident observed as closely as they could my instructions to collect without discrimination. An afternoon netted them over a thousand fragments, large and small. A third of these I class as black; more than half were black or black and red on white, and at least some of the white sherds are from jars of this type. My youthful aids reported that in the vicinity of the great plaza, in the very heart of the town, black pieces were scarce, but that toward the northwestern edge of the pueblo proper,— not of the suburbs or outlying houses— they became numerous. Both red and black on red pieces were found, though they aggregate only two or three percent of the total.

I believe this collection reasonably trustworthy. While dark sherds may have been a little slighted, they are far more numerous than I should have predicted after a month of frequenting Zuñi homes. When the changes in habits are considered that recent years have worked, it is a fair inference that a similar gathering made in a stratum a few feet below the present level of the streets would contain about one half black pieces, and correspondingly fewer of the patterned water jar type. In short, Zuñi potsherds of 1915 actually approximate those of type A, while those of 1815 may be expected to differ hardly at all, in color proportions, from those of 1615 or perhaps 1515. I suspect that a gradual diminution of the red ground ware, and perhaps of corrugated, is the chief change that has taken place (in the features considered) in the centuries since the discovery.

A few minor alterations may however be noted. The round lines of the deer and birds and scrolls on some modern Zuñi jars, are almost utterly lacking from the early historic sherds. This fact substantiates the conviction gained from museum inspection of modern Pueblo ware, that these designs are not native but the result of European influence, though to the Zuñi woman of today they seem as truly Shiwwi or pure Zuñi as do the angles she paints around them, or with which she covers the whole of the next jar she makes. Patterns in type A pottery are not infrequently lustrous — perhaps not a true glaze, but with a distinct glassy shine. art or custom of producing this has perhaps died out since the sixteenth century. Red ware with black patterns seems to be no longer made: at least I have seen none in Zuñi except in a few specimens pronounced old. Red ware with overpainted white lines is still occasionally manufactured, though I believe mostly in bric-a-brac and tourist articles; but this was infrequent also in period A. Most of the vessels in use today have their black pattern, if not a true black, at least a very dark brown. This is due to the mixing of the pigment with water containing either cedar, or ky'ahhewe, or another plant extract. The small, four-sided, step-edged bowls still used for sacred cornmeal — whose average age may be a generation more than that of household bowls and jars — mostly have their frog and tadpole patterns in walnut brown, the above dyes not having been used with the pigment. Much of the type A "black" decoration is of the same shade; especially on yellow or yellowish background. The prayer bowls also incline to a yellowish slip; so that they connect the twentieth with the sixteenth century in two ways. A distinct green, usually lustrous and sometimes bright, which is occasional on type A pieces, seems however to have no equivalent today.

The ware of type B, of type A, and of today, shows white or gray along the fractured edge. It is rarely reddish, or red like Southern California pottery. This is presumably a characteristic of the local clays. There are some ancient and modern fragments, mostly thick and coarse, burned red through; but the majority of red pieces are covered with a highly polished slip of that color.

History tells us that the people of period A were Zuñi, speaking and essentially living as now. The men and women who inhabited the sites of period B belonged to the unidentified prehistoric past. We cannot say that they were or were not Zuñi; but there is no known fact which prevents them from having been of this nation. That their ruins are low and soil-covered can be explained by reason of their age: that they are small in extent, in the open country, and located with reference to water supply or farm land or unknown considerations rather than for defensive protection, indicates a somewhat different life in the prehistoric period. I have not turned a spadeful of earth in the Zuñi country. But the outlines of a thousand years' civilizational changes which the surface reveals are so clear, that there is no question of the wealth of knowledge that the ground holds for the critical but not over timid excavator.

The results obtained are assembled in the statistics that follow. Table 1 gives the number of sherds, of each of the ten colors or types established for classification, at each ruin of period A; table 2, the same for period B. Lots obtained on separate visits to the same site are listed separately. It must be remembered that in all cases covered by these two tables, representative collecting was aimed at. For this reason the average sample from Kyakkima in table 1 must be carefully distinguished from the selected collection made on the same site but analyzed in table 7.

Table 3 converts the absolute numbers of table 1 and 2 into percentages. It speaks for itself.

Table 4 is a summarization of 3, on the basis of the three fundamental colors, black, white, and red. Of sherds colored differently on their two sides, or having a pattern in two or three colors, all containing any red have been counted as "red,"; of the remainder, all are included under "white" which bear any white. This arrangement gives red somewhat the advantage and black the disadvantage among the three colors; but any other method of summarizing would have been subject to an equal degree of arbitrariness. At any rate, table 4 reveals clearly, even to those who may not care to absorb the more numerous figures of the preceding lists, the distinctness of the two periods. In the historic time, "A," black preponderates, and red about equals white ware. In the prehistoric period, "B," white is overwhelmingly in excess and both black and red occur only scatteringly.

As my study progressed, I frequently found it difficult to divide the corrugated pottery into "black" and "white," and the difference between

periods A and B as regards this ware became apparent as one of total frequency rather than of difference of tint, though it is true that period B corrugated samples are almost throughout distinctly whitish. I also recalled that real corrugated ware is said by the Zuñi not to be made today, and is very scarce among the street débris, while most of the period A ruins show an appreciable percentage, though small compared with the type B sites. Further, the only really large proportion of corrugated pieces from any period A locality was at site W, which in its lack of building stone and general appearance resembles a type B site; next to it comes Pinnawa, which is more decayed as a ruin than even Mattsakya, and far more than all the others. It therefore seemed as if a progressive decrease of the proportion of corrugated ware of any color were a characteristic of the lapse of time in Zuñi Valley irrespective of "period"; and I arranged the sites in order Two of the minor sites of period B did not fit into the series; but both of these also showed other special characteristics, in their slip ware. On the other hand, Hattsinawa, which I had before classed as late B on account of its high proportion of red sherds, as well as because it is located on a more distinct knoll than any of the other B sites, comes nearer to the A ruins, in its frequency of corrugated ware, than any B sites except Kyakkima West, and from this latter the sample was of the smallest.

A subdivision of the two periods was thus indicated. obtained sequence of sites with several color characteristics. The results, which are given in detail in table 5, are surprisingly corroborative and allow of a tentative discrimination of five sub-periods, or six if modern Zuñi be Briefly, corrugated ware preponderated in the very earliest epoch, and diminished through all periods until it has died out in the present. On the other hand, three-colored pottery,—black and red patterns on a white or yellow ground — is wanting in B, appears sporadically in early A, becomes more numerous in late A, and reaches its climax today. Black on red ware, on the other hand, is most abundant about the middle time. It has not been found in early B, while late A and the present reveal a decline from middle and late B and early A. For red and for black pottery in general, the relative figures for period A are not worth anything; but in both classes the period B sites show an increasing approximation to period A proportions in the order of their age as suggested by the corrugated ware. I believe it may be concluded, while type B and type A sites can normally be distinguished without the least uncertainty, and the separateness of the two is fundamental, that nevertheless they do not represent two different migrations, nationalities, or waves of culture, but rather a steady and continuous development on the soil.

TABLE 1.

POTTERY FRAGMENTS FROM SITES OF PERIOD A.

	Mattu Visit 1	Matteakya ni 1 Visit 2	Pinnaua Visit 1 Via	aura Vinit 2	Kyak- kima Sample	Kolliwa	Site W	Towns-	Wimma- yawa	Shuna- tekkya	Total	Modern Roofs	Modern Zuñi 800se Streets
Black, dark gray, dull, without slip	ES.	319	54	101	99	11	45	250	Ξ	110	1174	37	348
Red on one side or two	œ	21	52	23	17	19	ଚା	160	30	7	596	4	56
White or whitish on one side or two	9	22	81	58	7	18	9	96	=	33	284	ů	94
Corrugated black or dark	1	ı	4	22	-	1	01	1	1	4	46	1	١
Corrugated white or light	2	10	-	œ	က	ı	∞	4	က	-	40	1	က
Black ^b pattern on white	14	85	15	18	20	18	4	46	53	20	262	13	487
Black ^b pattern on red	3.	11	þ	21	C)	က	-	16	-	ເດ	71	-	3
Red pattern on white	1	31	ဗ	က	-	1		20	4	9	30	ı	ı
White pattern on red	I	I	1	2	-	1	1	1	1	1.	~	34	i
Three colors — black and red on white	-	50	61	-	က	6	1	47	œ	17	108	7	138
Total	6	514	115	228	100 d	138	92	627	197	234	2318	69	1101
Obsidian	8	14	1.		•	1	-	-	ı	1			

A Red on one side and white on the other has been counted red.

b "Black" patterns include brown and green. A noticeable proportion of "black" patterns of type A are glossy; none of type B.
• "White" ground includes cream color and yellow; and in a few cases deep saffron, salmon, and brownish.

^d These hundred sherds are separate from those from Kyakkima classified in table 7.

· Occurs, but not in type sample.

b Probably all fragments of one vessel. Or red on white.

'Neglected for colored pieces. A representative collection would show at least half of the unslipped "black" variety.

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POTTERY FRAGMENTS FROM SITES OF PERIOD B.

	Shopdu Vinit 1	Shoptiurvayala Visit 1 Visit 2	Hattsi- nawa	Tetinatiu- wwayala	Te'allatash- shkanna	Kyakkima H est	He'i'lli'ann- anna	Site Y	Site X	"Haww-	Total
Black, dark gray, dull; without slip	28	కి	∞	1	Iъ	1	67		1	1	33
Red on one side or two	1	81	ก	-	1	-	ŀ	1	4	က	. 13
White or whitish on one side or two	50	106	12	ç	5	128	11	-	19	4	255
Corrugated black or dark	-	మీ	i	1	ļ	ı	ì	1	1	4	13
Corrugated white or light	15	66	==	35	14	က	I	1	108	19	304
Black pattern on white	2	35	9	00	_	00	4	17	50	14	115
Black pattern on red	-	5	61	1	ı	-	ı	ı	1	4	13
Red pattern on white	1	1	1	1	i	ı	ı		İ	1	ı
White pattern on red	1	1		1	ı	ı	1	1	ı	1	١
Three colors — black and red on white	ı		i	1	1	ı	1	1	1	1	1
Total	41	264	41	49	21	25	77	81	152	48	736
Obsidian			1	ı	1	1					
	1	1 1		!	1	1	1	•		1	1

• Several are sufficiently light in color to be doubtful. b Polished brown.

· Includes one piece of yellow, a color which, while largely represented among the "whites" of type A, is nearly lacking from the period B sites.

TABLE 3.

PERCENTAGES OF POTSHERD VARIETIES FROM SITES OF PERIODS A AND B.

	henidmos sesies UA		÷ι	∺	?1	41	19	_	1	1	1_	<u>5</u>	
	"Hawrikku B"	1	9	G.	6	40	8	9	1	1	1	8	
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		Black⁴	Red	White	Corrugated black	Corrugated white	Black on white	Black on red	Red on white	White on red	Three colors		

Designation of colors is as in Table 1.

b Present, but amounting to less than one half of one percent of the total number of sherds collected at the site.

SUMMARY — IN PERCENTAGES.

	"Hawwikku B"	9 5	79 92	12 3	100 100
	X ms	_	96 — -	 — -	8
	Y sug		100	1	901
od B	Dundana 'il' i' s' s	m	26	1	100
Period	Kyakkima West	1	65	∞	100
	Ţs'allalashshhanna	٠.	95	1	100
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	henidmos seites UA	53	25	22	100
	Shunnlekkya	\$	36	15	100
	Биоцонті W	56	22	22	100
	Townsyallanna	(40)	23	37	8
	.W sue	22	24	4	100
Period A	Kolliwa	51	56	23	901
Peric	Kyakkima	61	50	19	100
	Pinnauca	22	81	56	100
	M atteakya	8	27	01	100
		Wholly black	White or black	Containing any red	

TABLE 5.
Percentages.

Period Present	<i>Site</i> Zufii	Corrugated 0ª	Three Colors 0	Black on Red 1	Any Red	"Black" ware
LATE A	Towwayallanna Kolliwa Shunntekkya Wimmayawa Mattsakya Kyakkima	1 2 2 3 4	8 7 7 4 4 3	3 2 2 1 3 2 2 1 3 2 2 1	22 ^b	53 ^b
EARLY A	Pinnawa Site W	10 24	1	8		
LATE B	Hattsinawa Kyakkima West	27 12°	_	5 4	10 8	19 °
MIDDLE B	Shoptlawwayala "Hawwikku B"	40 49	_	2 6	3 12	7 9
Early B	Te'allatashshhanna Site X Tetlnatluwwayala	66 71 72	_ _ _		 3 2	5 1 —
?—B	He'i'tli'annanna Site Y	_	_	_	_	3

^a Present, but less than half of one percent.

I am aware of the thinness of my foundation in rearing a structure of half a dozen eras on nothing more than three or four color and texture features of a few thousand sherds gathered on the surface of some fifteen closely grouped spots. I was tempted to buttress my chronological classification by further collecting, especially at sites from which my representation was little more than vanishing. But my stay in Zuñi is short; the time that gathering, sorting, and tabulating would require, is scarcely available; and even twice or three times the number of surface fragments would not suffice to convert my tentative conclusions into positive ones. The final proof is in the spade; and that involves money, a gang of men, months of time, and an examination, if possible, of all ruins within a given radius. The real confirmation of my chronology I must thus of necessity leave to the future. But I am confident that however the present classification be altered in detail or supplemented by wider considerations, in essentials it will stand — because the essentials are obvious on the ground.

^b The variation between sites here lumped seems due more to accident or selection in collecting than to differences typical of period.

^c Unfortunately only 25 pieces are available from this site.

The problems of prehistoric Zuñi and of the earliest Southwest will be solved only by determined limitation of attention. There has been treasure hunting in this fascinating region for fifty years, some with the accompaniment of most painstaking recording, measuring, and photographing; but these dozens or hundreds of efforts, some of them costly, have produced scarcely a rudiment of true history. It is fatal for the investigator to exhume pottery in the morning, note architectural construction at noon, plot rooms in the afternoon, and by evening become excited over a find of turquoise or amulets. Such procedure may allow areas and even sites of most distinctively different type to be discriminated, but the finer transitions, on which ultimately everything depends, will be lost sight of under the wealth of considerations. One feature at a time, then another, then correlation, is the method that will convert Southwestern archaeology from a delight for antiquarians into a historian's task. The fine bowls, precious jewelry, and beautiful axes that already cumber our museums, will find their use; but that time is at the end of study, when they can be placed and used with meaning, not at the beginning, when they confuse and weary. At present five thousand sherds can tell us more than a hundred whole vessels, and the bare knowledge of the average size of room in a dozen contiguous ruins may be more indicative than the most laborious survey of two or three extensive sites.

Particularly does the necessity of concentration apply geographically. A promising site here and another a hundred miles away may show striking differences in innumerable respects. But in the present chaos of knowledge who can say which of these differences are due to age and which to locality and environment? With the chronology of Zuñi, of the Hopi country, of the Rio Grande, of the San Juan, and of the Gila worked out independently, comparison may yield momentous conclusions; but comparison at present, however suggestive, will bear no certain fruit. If the investigator who enters this greatest of American archaeological fields allows himself to be appalled by the length and variety of the labors of those who have preceded him, his outlook will be dreary; if he recalls that but for a few scattered scratches the field is virgin as regards real history, and if he wisely limits himself, and proceeds by the common sense plan of one thing at a time and that hammered at until it yields, he surely has before him one of the most promisingly productive of scientific problems.

NOTES ON INDIVIDUAL SITES.

PINNAWA.

There is plenty of loose rock on the summit of this mound, but not a trace of the walls plotted by Mindeleff is now visible. Even the rebuilt corrals and the house still in use in 1885 are gone. Pottery extends at least fifty yards south of the wagon road, and north almost to the river. The latter may be washed; the former is on higher ground than the road and plotted southern part of the village. The knoll is gentle, and the site of the open character of Mattsakya and Zuñi rather than naturally defensible like Kyakkima, Kolliwa, or Wimmayawa.

MATTSAKYA.

This ruin has decayed nearly as much as Pinnawa in thirty years. There are no standing walls whatever, and vegetation is comparatively thick. The two rooms west of the shrine are fully traceable; but that is all. (See table 6.)

KYAKKIMA.

Kyakkima has altered little since Mindeleff's survey. It must be noted that his map is oriented with east to the top of the page. The town was built on four distinct terraces or levels, which I estimated at thirty, fifteen, and fifty feet above one another. The two former figures agree with Mindeleff's contours, but his lines stop before reaching the highest terrace, which lies dead against the face of the cliff on whose top stand the ruins of Towwayallanna. With its back against this tremendous wall of rock, is a low foundation, enclosing a space much larger than an ancient Pueblo room, which shows in Mindeleff's plan as a rounded, irregular quadrangle. To my eye it seemed more nearly semicircular. The lieutenant governor, when his attention was called to it, pronounced it a "head man's dance house." The upright and horizontal slabs at the east end of the ruin are still in place; but I counted seven of the former where the plot shows five. My informant volunteered the observation that here prayers were spoken to the rising sun - somewhat as by the Zuñi pekkwine today. Mindeleff's Indians suggested defense, and he himself conjectured graves. I will not presume

TABLE 6.

Mattsakya.

Second Visit.

Black, dull, and gray, all without slip, mostly smoothened black inside Gray, crackled, polished, texture different from white and yellowish slip	307 12	319
Red, polished, some on both sides, some with white slip on one side	12	12
White slip on one side	30	
Yellowish slip — about half the pieces on both sides, the other half usually have a polished gray, perhaps slip gray, on the outside	47	77
Corrugated black	5	5
Corrugated white — some with thin white slip, others with thick gray smooth slip (?) on inner side	10	10
Black on white; only two show hatching. Pattern mostly on inside and generally true black, but there are a few brown pieces Brown on yellow Pattern inside, outside white, yellow, or gray 17	23	
Pattern inside, outside red 2		
Pattern on both sides 5——— Brown on grayish, from very light to dark	24 11	58
Black on red; only one hatched; undecorated side either white or red	11	11
Red on white	0	0
Red on yellow	2	2
White on red	0	0
Three color: black and red on white: but black is often brown; red brownish; white, yellowish	14	
Three color: deep yellow ground with red pattern edged in brown	6	20
Total pottery		514
Lava pieces, large and small	12	_
Obsidian, mostly small pieces	14	
Arrow point, milky, translucent	1	

to decide the conflict. Two of the three lower levels are depressed in the center, suggesting ruined house walls surrounding plazas. This was also the lieutenant governor's explanation. We may have been misled, however, by the fact that the interior cross walls which Mindeleff diagrams are not visible today. Still, one would expect that a solid cluster of rooms would fall into a heap higher rather than lower in the middle. (See table 7.)

Kolliwa.

This ruin, named to me by several informants before it was visited, is three miles distant from Zuñi, about 15 degrees east of north or along the magnetic needle. It lies at the edge and near the eastern end of a red sandstone ridge that stretches for several miles north of Zuñi in a general east and west direction, or more nearly northeast and southwest. Some three or four hundred feet below the cliff and talus that form the top of this ridge, a nearly level bench, a short hundred yards in width, extends for some distance, more or less intermittently. At several places small but deep canyons head suddenly from the bench with a sheer drop. On two small knolls on both sides of one of these drops is Kolliwa, the western settlement measuring about 50 by 75 feet, the eastern 60 by 120. The knolls rise but slightly above the bench, and each ruin has a long straight wall along its back, facing the bench and guarding it from attack on this its weakest northwesterly side. These walls run parallel with the cliff. On their other sides, the outer walls closely follow the steep rim of the knolls. the sites from defensive motive is obvious. It is true that the cliff seems to loom above both; but its height as well as its distance would cause an arrow to be aimless or spent before it fell in either part of the town, and would render any other missile totally futile.

A hundred and fifty yards down the canyon from where it heads between the twin townlets, is a cottonwood, the only one in miles. A few steps below, is a spring, a diminutive pool with a few stones built around it by sheep herders. When seen, it was dark red from the mud of recent rains, and scarcely drinkable even to the thirsty. But the canyon bed seemed wet, and no doubt a hole in a well chosen spot would have filled with clear seepage. At any rate, the cottonwood attests permanent water.

It is difficult to decide where the inhabitants of this wild fastness grew their food. Their canyon is a rocky little gorge; and while it soon takes a calmer course, it is a mile before, uniting with other washes, it spreads into a nearly level flood plain, and an unfavorable clay one at that; while the nearest part of Zuñi Valley is a mile and a half distant. Just below the

TABLE 7.

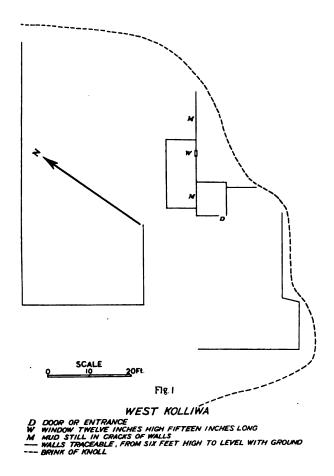
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Sixteen of the above show hatching in the pattern

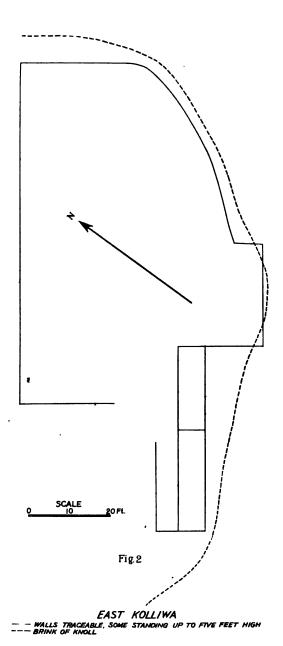
built on knolls, however, and for some distance along the ridge in both directions, at the same relative height, the spurs between the numerous little canyons are sand topped; and while now overgrown with cedar and piñon, and somewhat rolling, they might have afforded small level patches on which with careful nursing corn could be grown.

The population of Kolliwa was never large. The two towns together



may have harbored a hundred and fifty people. But living rooms are distinctly traceable only on the peaks of the two knolls, and the outer defensive walls may each have enclosed only a few dwellings.

The masonry varies in quality, and in thickness from nearly one to at least two feet. A window, three or four feet from the ground, and clay



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mortar with imbedded pebbles, in the chinks of the best preserved masonry, may be seen in West Kolliwa. Too great a recency need not be argued from these features; but a notable antiquity is also out of the question.

This inference is confirmed by the pottery, which is most clearly of period A. The only distinctive circumstance is the total absence, among more than a hundred sherds, of corrugated ware; and this may be accidental.

Sketches of the twin sites are appended. I had not been led to expect a real ruin, so a knife point, slab of stone, broken match, and walking stick took the place of pencil, paper, scale, and tape. Close accuracy was thus out of the question, but the two diagrams are approximately true.

SITE W.

A third of a mile northeast of the government day school, and a hundred and fifty yards from Governor Lewis's house, the children found sherds and brought them in. The site has been irrigated of recent years, and besides two or three gentle rises of a couple of feet, there is nothing to cause the faintest suspicion of former occupation, except a small proportion of pebbles in a few spots. The pottery is of type A in standard proportions, except that corrugated ware is unusually abundant; even obsidian is present—I picked up the flake myself. It is however the only type A site which is totally ruinless and rockless and on the level ground.

TOWWAYALLANNA.

Towwayallanna is the impressive mountain that all who write of Zuñi have been impelled to mention. Formed by age long erosion between the Zuñi River and a large and long wash on the southwest, it dominates the imagination as it does the landscape. Flat-topped, sheer-walled, a mile in each direction, and a thousand feet high, it has three times sheltered the frightened Zuñi in the historic period — including twelve continuous years after the great rebellion of 1680,— and no doubt served them as refuge on more than one occasion before. In their own creation myth, they found safety on its summit from the flood as well as from their foes; and their shrines to Ahhayuta his elder brother and Ahhayuta his younger brother — the war god boy twins — are still maintained on the top in undiminished sanctity, as innumerable bits of turquoise, shell, and every kind of valuable thing attest. There are two trails which are difficult if not dangerous; a third can be comfortably descended to the rolling sand hills of the peach

orchards in ten minutes, and climbed if necessary on burro back; but it has been improved for the purpose. In old days it would have constituted nearly as formidable a barrier to storm as the other two.

Locally, Americans know the mountain by its Zuñi name. In books it is written Thunder Mountain, for which Cushing is probably responsible, and which is as striking and as worthy a designation for the majestic rock as could be desired, and in the best vein of that man of genius. Unfortunately, I must incline to Mrs. Stevenson's cooler interpretation of Corn Mountain, not only on Zuñi authority, but on my own imperfect knowledge of the speech. Thunder is towowo, and corn towwa, in the orthography which I follow. I have more frequently heard Toayallanna—also, it is true, toa more often than towwa; but I suspect the ww to be slurred after o in both words.

I add for the advantage of those who may have the good fortune to follow me in a stay, however transient, at "the middle place," that it is impossible to carry away a truly full remembrance of the country of the Zuñi,— of their earth— until he has looked down the valley from the rim of this looming mesa. If, in addition, one be privileged to see distant rainstorms travel among the still sunshine, he will know the world the Zuñi heart dreams of as well as the one its body walks.

The ruins, which do not appear to bear any other name than that of the mountain, have been surveyed and described by Mindeleff. They do not seem to have altered to any sensible extent. The southeastern portion is practically on top of Kyakkima, six or seven hundred feet below. My visit occurred after a week of rains; and two natural basins of water were seen which with a little damming might have been extended to the size of those mentioned by Mindeleff. The ruin is the largest in the vicinity. It gives the casual impression of having sheltered a thousand people; but is so scattered that it cannot be surveyed in one sweep of the eye, and may have harbored twice as many. The available building stone did not break into even slabs; hence the walls are shambling and tumbledown, and afford no ground for estimating the age of other ruins by comparison with the condition of this two hundred and twenty-two year abandoned masonry. Part of the mountain top is arable sand; but the area available is too small, if ever it was utilized, to have supported more than a minute fraction of the population.

The potsherds of course are of type A. They are frequent at some distance from the structures. A pair of willing hands guided by a sufficiently patient brain, might gather a thousand pounds without a tool. All five members of our party collected at different spots; so that I suspect a somewhat undue proportion of colored pieces, and that perhaps half of the monotonous black and dull unpolished fragments within reach were left.

Red ware is relatively abundant; but if sherds red on one side and white on the other had been counted as of the latter color, the proportions would have been exactly reversed. Nineteen of the one hundred and sixty pieces reckoned as red are yellow overpainted with a streaky dark maroon; twenty-four are black or gray on the opposite side, sixty-five white; and only fifty-two red on both sides.' Even these were possibly sometimes given a white slip before the red-burning wash of yellow ocher was applied.

White sherds include some with the pure lustreless crumbly slip of Cliff-Dweller vessels; others ranging from white through cream to yellowish, polished like modern ware, and in some cases probably fragments of patterned jars; while a fair proportion seem to be without true slip, and of a gray which but for its light shade would have been reckoned as dull or "black."

Decorated ware, with few exceptions, might be modern. Black on white fragments are about as numerous as black and red on white; but many may be from three-colored vessels. The same is probably true of some of the red on white sherds, but others appear to have been painted in these two colors. Some glossiness appears in a few dark green or brown patterns; but the luster is thin.

Wimmayawa.

This ruin is visible from the Gallup road, an eighth of a mile west of which it follows the outline of a small hill. The distance from Zuñi was said to be five miles. I estimate it at three and one half. There is a living spring near by, still known by the name of the ancient town; and a long wash, which the road follows for a distance, must carry water below ground, since it supports a cottonwood in fair condition. The levels along this stream bed would suffice for some patches of corn; but the farms of the settlement must in the main have been in Zuñi Valley a couple of miles away. The ruin is perhaps a mile to a mile and a half distant from site X, about in line with it and the Black Rock school.

Wimmayawa could have housed two or three hundred people. Its east and west, and north and south walls conform to the lines of the hill on which it is situated, though less closely than at cramped little Kolliwa. Defensibility and water led to the selection of the spot for habitation.

Most of the walls that are first visible, are recent corrals, probably following old foundations almost throughout, but with the inner walls removed to build up the enclosure. One of the corrals is in splendid condition, and its entire interior is level with sheep dung. In one place the loose, unmortared corral rests visibly on an old wall. The difference is striking, but

indicative of diversity of use rather than of deterioration of art. We too build our dwellings better than our barns. Outside of three obvious fences, the masonry is probably all ancient, and where tolerably preserved, of much the same type as in the just mentioned piece of foundation. A room eight by seventeen feet, and another ten square, are in fair condition. These seem normal interior sizes at period A sites. Mud mortar was observed in place. Building stone is at hand. It does not slab as evenly as at Kolliwa, but at least as well as at Kyakkima and far better than that of Towwayallanna; and the quality of the masonry is in direct accord with the nature of the stone. It would therefore be rash, in this region, to argue age from condition of walls, or to assert a uniform decline of the building art with the progress of time.

So far as I know, Wimmayawa has never been plotted, and I was therefore inclined to attempt a sketch survey. An encounter with a rattlesnake, presumably attracted by the innumerable lizards and small rabbits that haunt the broken walls, however led me to conclude that such a rough diagram as I could make alone with the aid of a stick, would not be worth the risk of stepping with unleggined feet over another one of the species; and I abandoned the endeavor.

Pottery was only fairly abundant; and as at other ruins, I found more in the open spaces just outside of the town than in the débris of the rooms. The kinds and proportions of ware are thoroughly representative of type A. About a third of the red pieces were white on one side. Of the eleven "white" four were yellowish, and five showed the porous bluish surface so prevalent at He'i'tli'annanna. All the red on white sherds, and some of the black on white, seem to have come from vessels that originally bore both black and red patterns on a white surface.

SHOPTLUWWAYALA OR SHOPTLUWWALAWA.

This little knoll measures 65 yards from north to south, where it is well defined, and about 120 from east to west, in both of which directions it fades out into the surrounding level ground. The shrine of the Yellow Sallimoppiya is nearly in the exact center. The spot has unquestionably been inhabited. The complete absence of building stone forces the possibility that the builders of period B may have used adobe clay. But it would be fantastic to rear any imaginings on this speculation until thorough excavations have been performed. It is more likely that all the surface rock has been carried away to be built into nearby Zuñi.

He'i'tli'annanna.

This site, whose name seems to mean "blue wall," is on the road to Kolliwa, about two miles from Zuñi. A small knoll, five or six feet high, was seen a few yards to the left of the path, and perhaps two hundred yards east of the easterly end of Alla'immutlanna, a steep ridge paralleling for a mile or so the higher and longer one at whose base Kolliwa is nestled. As I approached, a few slabs from an abandoned shrine became visible on the summit; then the indicative pebbles appeared in the soil, and a moment later the first potsherd — a white one — was found. There were needed only the observations that no building stones lay about and that the site was a small one — perhaps fifteen yards across — to make a habitation of period B morally certain. The pottery, though not abundant, was numerous enough for ample confirmation. There were no red pieces, and only two small black ones, one of them a bit in such condition that its classification must be doubtful. All the other seventy-five sherds were white, four painted with black patterns, the rest plain. Of these, somewhat more than half presented a porous whitish slip of weathered appearance, while some twenty-five or thirty were of a distinct bluish gray, pale enough to be reckoned as white. There was not a single corrugated piece. The uniformity as well as distinctiveness of the ware at this little site is remarkable.

It may be noted that a hundred yards to the north, near one of the lowest cedars on the gentle slope that fronts toward Zuñi, lay a large brownpainted creamy-yellow potsherd — typical modern ware. Its appearance and feel were distinctly new. It may have rested where found a few days or several years. Some hundreds of yards further, right in the path, a smaller piece of typical black ware was found — with equal lack of apparent reason for its isolated presence. These examples, together with the occurrence of a piece of bottle glass and of American made china on the surface of Shoptluwwalawa among the numerous sherds of the prehistoric period, emphasize the slight weight that can be attached — in surface observations — to unique specimens, and the necessity of basing inferences on series of some magnitude.

He'i'tli'annanna is not far from the northern and now cultivated edge of Zuñi Valley. The slight slope on which it stands may also be cultivable, though this seems doubtful even for the acclimated native corn. Water may once have been obtainable in some crevice at the base of the nearby ridge.

SITE Y.

More puzzling are a few potsherds found a quarter of a mile further in the same road, at what may be called He'i'tli'annanna Pishlankwi, or "Bluewall north." Right alongside the road, nearly all about one of the small cedars that begin to abound here, and none more than a few steps distant, lay eighteen discoverable pieces. All but one had a black pattern on white; and the exception was a minute fragment that might well have come from an unpainted spot on a decorated vessel. The other seventeen pieces classify as follows:—

	Broad bands	Hatched
Inside black	2	7
Inside dark gray		3
Inside white	5	
	7	10

There is variety enough within this narrow compass to demonstrate against the possibility that all the pieces were remnants of one, or even of two pots, that happened to be broken here at some time. The white is of the unpolished type of period B. But the site seems most unlikely. The ground is sloping bed rock, covered only with thin patches of disintegrating slabs and sand. Fifty yards to the east is an elevation, the crest of one of innumerable spurs extending at right angles to the above mentioned mountain ridge. This spur looks like the natural spot for settlement in the vicinity; but search produced not a single evidence of occupation on the summit.

This site, if it really be such, with ancient He'i'tli'annanna on one side of it and more modern Kolliwa on the other, makes three in which no corrugated pottery was discovered.

SITE X.

The opposite is the case at nameless site X, where more than two thirds of a tolerable series was corrugated — every piece white. I cannot locate this site exactly. It is three or more miles from Zuñi, to the east of Kolliwa. Our first attempt to find the latter ruin was made with a youthful guide who proved not to know the way and led us to the right. At last we stopped in the middle of nowhere,—a sandy rolling tract away from water and nearly half a mile from the long cliff ridge at whose foot Kolliwa lies

further west. In several spots here pottery was thick; but the usual pebbles of sites of type B were absent, and only one piece of the normally frequent vesicular lava was found. Why anyone should settle in this deserted spot rather than in a hundred others about, I cannot understand. Perhaps it was at one time a cornfield; divested of its crop of piñons and cedars, its white sand might yet be made to yield grain; and the sherds may possibly be from jars brought to the growing field. The site certainly has all the typical marks of a Period B site in an exaggerated degree; but, as usual where material is sufficiently abundant, there was a sprinkling of black and of red pieces — the majority dull red outside, blackish inside. Not one of the 152 sherds bore any evidence of having been polished, as was customary on ornamented ware in period A.

SHUNNTEKKYA.

An old Zuñi woman who saw my young friends picking up sherds before her door, and learned that they were for me, brought a rag full which her father, six or eight years ago, had gathered, perhaps while sheep herding, and carried home to be ground and mixed with clay for new pots. I could not learn where the ruin is, except that it lies perhaps ten miles, as the Indians vaguely count them, to the south ast, somewhere behind Towwayallanna. I was loath to include such data; but as a count revealed perfectly typical period A proportions, and as the collector's motive would have led to no deliberate selection, I have added the figures.

"HAWWIKKU B."

The same considerations apply to a smaller lot subsequently offered to me as from Hawwikku, near Ojo Caliente, one of the three outlying farming settlements of the Zuñi. But here there is a second difficulty. Hawwikku was one of the seven cities; it has ruins of a church; and it was inhabited until the Pueblo rebellion. But a glance at the sample proved it to be of type B. The owner was questioned, but, as I had never been on the site, not with much definiteness; and I only elicited that the sherds were picked up, also for pottery making, at Hawwikku itself. He may have selected, by some fancy, only such pieces as happened to be of the earlier type; or he may have gathered on a spot near Hawwikku which represents a settlement of an earlier time than the historic Hawwikku. I have therefore called the place "Hawwikku B." The next investigator may possibly

identify it with little trouble. I was tempted to acquire further collections of the same kind, of which there must be many in the town; but while the Zuñi are a reliable people, it seemed wisest not to swamp myself with material from locations I had not seen.

Zuñi.

August 3, 1915.

POSTSCRIPT.

A delay in printing allows me to add references to literature, though these remain references, unfortunately, more largely than they reveal relations.

Bandelier in his various writings, summed up in his "Final Report" in volume IV of the American Series of Papers of the Archaeological Institute of America, distinguishes the earlier period of black on white ware from the later one that extends into historic time. He notes also that obsidian occurs only in ruins of the later era.

Dr. Fewkes spent part of his first stay at Zuñi in an archaeological reconnaissance somewhat more extended than mine, on which he has an admirable paper in the first volume of the Journal of American Archaeology and Ethnology. As Dr. Fewkes principally examined ruins as such, and makes no reference to potsherds, his and my preliminary essays present few points of contact.

In the twenty-second Annual Report of the Bureau of American Ethnology, Dr. Fewkes describes the results of two summers of exploration in the ruins on the Little Colorado and in adjacent territory. The Little Colorado pottery bears certain obvious similarities to ancient Zuñi ware, but there are also striking differences that impede immediate correlation. Dr. Fewkes' numerous illustrations of whole vessels do not suggest very strongly my sherds of type A, while his scanty references to corrugated ware seem to preclude the close connection of his finds with my type B. His predominating attention to complete vessels and my limitation to surface fragments may account for some of the discrepancy. But his frequency map on plate 70, with its revelation of a strong preponderance of red ware on the Little Colorado, disposes offhand of any complete cultural identity of this region with Zuñi A. It would be rash to guess whether the differences represent distinctions of available material, of period, or of contemporaneous but inherently diverse cultures.

This uncertainty is increased by the one published account of the Hemen-

way Expedition archaeological results, a description by Dr. Fewkes in the Putnam Anniversary Volume, of the discoveries by Cushing in his excavations at Hallonawa, across the river from Zuñi, and at Heshshota'utlla, fifteen miles east. Dr. Fewkes identifies this ware, now stored in the Peabody Museum, with that of the Little Colorado. Many pieces are clearly of Zuñi type A; but again, the prevalence of red ware does not fit with my surface results. Dr. Fewkes also sees a greater difference between this late prehistoric Zuñi pottery and modern Zuñi ware than I am able to perceive, whereas he appears to connect the latter with the northern Cliff-Dweller pottery, in type if not historically. Dr. Fewkes also scarcely refers to the possibility of continuous cultural development within an area, or to Spanish influences, while he stresses far more strongly than I should dare, clan migrations and hypothetical compositions of tribes. Granting these latter to have occurred to the extent that he indicates, it would seem to remain to be established, instead of assumed, that such accretions would seriously affect the type of ware in customary manufacture at a pueblo or in a group of towns.

Mr. N. C. Nelson, in the concluding paragraphs of his "Pueblo Ruins in the Galisteo Basin," in volume XV of the Anthropological Papers of the American Museum of Natural History, has a reference to glazed pottery in late prehistoric and historic times, which shows that ware of this type is chronologically of sufficient importance to receive closer attention at Zuñi in the future than I have given it in my cursory examination. Mr. Nelson's Galisteo specimens in the American Museum however reveal a very much heavier and rougher type of glazing than I have observed in Zuñi potsherds, and the style is apparently the usual one for some periods at Galisteo, whereas at Zuñi its employment seems always to have been sporadic or hesitating. A time correlation between the two regions will no doubt be possible on the basis of glazing, but superficially the wares of the two regions do not resemble each other enough for any off-hand identification.

A sequential determination which Mr. Nelson has made from stratification at San Cristobal, which promises to be of the utmost importance, remains unpublished and unavailable to date.

On the other hand, Dr. A. V. Kidder, in his "Pottery of the Pajarito Plateau," in the second volume of the Memoirs of the American Anthropological Association, sets up a valuable sequence of wares in another part of New Mexico. Careful study and critical judgment compensate in this work for the absence of any discovered stratification. Dr. Kidder distinguishes a black-and-white, a "school-house," a Frijolito, and a Pajaritan period. The ware of the second of these types he connects, though without identifying, with the Hemenway prehistoric material from Zuñi described

by Dr. Fewkes. This would make Dr. Kidder's first period correspond with my B, his last three with my A.

Dr. Kidder has also done me the favor to look over my sherds, and pronounces my period A ware to be, at least in general, of the type of the Heshshota'utlla pottery in the Peabody Museum. He also regards my sherds from He'i'tli'annanna as closely similar to the typical ware of a rude and presumably early culture discovered by him in the San Juan drainage, as yet undescribed and tentatively named "slab house." This correlation confirms the distinctness of the He'i'tli'annanna ware which I had implied at least by exclusion in my table 5, and is of the greatest interest in that it indicates the probability of another period, or at any rate definite sub-era, at Zuñi.

Dr. Kidder has also pointed out to me that the difference between dark and light corrugated ware is likely to be the effect of long continued weathering. This would indeed give some measure of age for exposed pieces, but probably does away with the distinction between dark and light corrugated pottery as essentially characteristic of period. Determinations of period will therefore have to be made, in this ware, by its total frequency relative to all pottery, as I had already inclined to do in my fifth table, or by the nature of the corrugation itself.

In spite of indisputable local and non-temporal differences, as attested for instance by the absence of Dr. Kidder's "biscuit" ware from Zuñi as well as by the distinctive character of glazing there; in spite too, of the paucity of my material, and the fact that all of Mr. Nelson's and part of Dr. Kidder's ceramic data remain unpublished, it appears to be clear that chronological, or at least sequential, determinations can already be made for at least three New Mexican regions, and that these evince certain correlations among each other. The successful conversion of the archaeological problem of the Southwest from an essentially exploratory and descriptive one, with interpretation based chiefly on Spanish documentary and native legendary sources, into a self-contained historic one, seems therefore at hand.

American Museum of Natural History, February 12, 1916.



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VOL. XVIII, PART II

ZUÑI KIN AND CLAN

BY

A. L. KROEBER



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The recent issues are as follows:--

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ZUÑI KIN AND CLAN.

By A. L. Kroeber.

PREFACE.

This publication is the result of inquiries and observations made at the native town of Zuñi in New Mexico in June, July, and August, 1915, and during the summer months of 1916, as part of the Archer M. Huntington survey of Pueblo culture in the southwestern United States, under the auspices of the Department of Anthropology of the American Museum of Natural History. The work began as a study of kinship, but the manifold contacts of kinship with other phases of culture soon led to an amplification A collection of specimens illustrating Zuñi civilization was also made for the Museum. During the summer of 1916 Mr. Leslie Spier was engaged in archaeological exploration on behalf of the Museum in and about Zuñi, and his coöperation made possible a number of inferences which appear toward the end of the paper; besides which many other passages have been influenced by daily association and discussion with him. During the same summer Zuñi was visited by Mr. N. C. Nelson, Dr. A. V. Kidder, Mr. C. E. Guthe, Mr. E. S. Handy, Dr. P. E. Goddard, and Dr. R. H. Lowie. opportnuity thus afforded for discussion of problems on the spot proved exceptionally stimulating. The same is true of previous conferences with Mrs. Elsie Clews Parsons, whose series of intensive ethnological and psychological studies of the Zuñi is well known. Finally, talks with several earlier students of the Pueblo proved helpful to one who was entering the Southwestern ..eld as a novice; among whom Mr. F. W. Hodge and Dr. Herbert J. Spinden should be especially mentioned.

August 22, 1916.

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INTRODUCTION.

EAF

The foundation of Zuñi society is the family. Life centers about the house. The clan is above all a ceremonial institution.

With the same steadfastness with which they adhere to their religion, the Zuñi cling with tenacity and warmth to their relatives. To every person allied to them by ties of blood, through either a male or a female relative, they are blindly loyal and instinctively affectionate. Only a degree less vigorous are the sentiments that attach them to the men and women married to their blood kin. Outside of this circle, all are but associates or acquaintances, near or remote, according to chance of circumstance. A daily companion, a sister's friend, a clan associate, a brother's house-mate, are friends who naturally support a Zuñi and whom he supports. others, with but little distinction of speech, race, or nationality, are treated with unfailing affability, unless there be grave cause for the contrary; but they are regarded, as circumstances may dictate, with distrust, envy, or hate as readily as with the normal kindliness that is so pleasing a feature of Zuñi behavior. Toward the stranger, reserve is fitting, but also amiability; and if he reciprocate with both qualities, whose combination constitutes Zuñi politeness, he is as sure of favorable treatment, and of needed assistance, as a member of the tribe. As continued intercourse cements the association without disturbing happening, American, Mexican, Pueblo, or even Navaho is held in warmer esteem than many a Zuñi, to whom indeed common customs unite, but with whom long acquaintance has perhaps resulted only in resented grievance, continued opposition, or fear of harm. The normal and unshakable heart and kernel of all these widening and diffusing circles, however, are the blood kindred, the family of blood kin in the wider sense as we ourselves use the word. Without a realization of this fact, it is possible to know what a Zuñi may do, but impossible to understand the emotions that dictate his actions.

The house belongs to the women born of the family. There they come into the world, pass their lives, and within the walls they die. As they grow up, their brothers leave them, each to abide in the house of his wife; but they and their children are constant visitors and intimate frequenters of the old home. Each woman, too, has her husband, or succession of husbands, sharing her blankets, and as her children begin to play about, their father's kin and household also resort to the house. So generation succeeds generation, the slow stream of mothers and daughters forming a current

that carried with it husbands, sons, and grandsons. Now and then a new dwelling may be built by all the inmates, or for a girl of the house by an enterprising husband; but in general the same walls, or re-erected ones on the same spot, compass the lives of woman after woman born within.

It is inevitable that life-long working, playing, eating, sleeping, and talking together should knit together with exceeding closeness the dwellers under one roof. In this sense the Zuñi may be said to follow maternal The children of sisters, who have never known separation, must often stand nearer to one another in actual conduct than the children of brothers, who have grown up in separate homes and among distinct groups of associates. So far as Zuñi reckoning goes, however, the sentiments of kinship and affection are the same toward father and mother, toward the brothers and sisters of each, and toward the partners and children of son and daughter. A cousin on either the father's or mother's side is identically an older or younger brother, toward whom the same degree of oneness is felt. The house is basic in Zuñi life. Attached to her ownership of it is the Zuñi woman's position in her world. Upon her permanent occupancy of the house rests the matrilinear custom of the tribe. But kinship is thoroughly and equally bilateral. Take away from the Zuñi woman her possession of the home, and her apparent preëminence in relationship vanishes.

The clan is maternal, totemically named, and terms of relationship are applied to all members of it. There is no belief in descent from or kinship or spiritual connection with the animal or object that names the clan; nor are there taboos of food or otherwise toward it, though such prohibitions are observed by the Zuñi in matters distinct from clanship. A person is of the mother's clan, but the child of the father's: I am Turkey-people, I am Tobacco-people their child, a Zuñi will say, and will feel a substantially equal relation to each. The occasions on which he is chosen for some office, dignity, or duty on account of being the child of his father's people are nearly as numerous as those which fall to him as a member of his mother's. He may not marry a girl of his mother's clan; but neither may he wed one of his father's, unless no actual blood kinship with her is clearly to be traced; and even then the practice is disapproved. Such and such a house is readily identified as of the Coyote-people or Dogwood-people or Badger-But there is no one or primary clan house, no clan council, no clan head. In daily life it is common residence, and known blood common to individuals, and even friendship and neighborliness, that count. The clan is not thought of in ordinary personal relations of man to man, or man to woman. It is sisterhood or second cousinship that unites two women, not the circumstance of both being Eagle-people. It is only when a Zuñi priest is to be made, an idiot god to be impersonated, food to be brought to the dancers in a tribal ceremony, that custom requires the men or women charged with these privileges or obligations to be members or children, as the case may be, of this or that clan. Take away the clans, and the forms of Zuñi religion will be studded with vacancies, will even have to be made over in part; but the life and work of day to day, the contact of person with person, will go on unaltered. The clans give color, variety, and interest to the life of the tribe. They serve an artistic need of the community. But they are only an ornamental excrescence upon Zuñi society, whose warp is the family of actual blood relations and whose woof is the house.

In the face of a hundred conflicting possibilities, it would be idle to conjecture that the clans were once an essential element of the Zuñi social structure, and conformed to a prevalent ethnological theory which rests the society of the less civilized nations upon the clan and deprives it of the family and household. How far this theory may truly accord with the customs of other tribes, I cannot say, the Zuñi being the first people with a fully developed clan system with whom it has been my fortune to associate. It is well to remember intently that the practices of many nations are likely to be many, and may vary to an astonishing degree. Ethnology would be a barren science otherwise. But it is equally wise ever to keep in mind that those men whom we are wont to denominate savages are equally men with ourselves, with the same equipment of minds and feelings as we harbor; and that therefore they are likely to possess only such customs as are practised at least in some measure by ourselves, or as rest upon emotions which familiarity with the customs in question would cause to seem natural A society in which the family as we know it is entirely replaced by the clan, is thinkable. Yet it may be suspected that the fantastic novelty of such a scheme has helped to stimulate interest in the plan which would not otherwise have been directed to the lowly lives of savages; until, this view of their mode of existence becoming orthodox, it grew the fashion often to look only for clans, and to overlook actual family life, among nations whose society after all conforms in many respects to ours. I venture to believe that in many another totemic and clan-divided tribe the family of true blood relatives is fundamental.

With the view that the present state of Zuñi society is an altered one, and that it was preceded by a condition of the predominance of clan over family, it is thus vain to quarrel. If any one finds it more profitable to demonstrate that such and such must have been the practices of this or that or all nations at some time before we have cognizance of them, rather than to understand and weigh in a just balance their manners within the historic period, that satisfaction cannot be denied him: provided he does not proclaim or assume that the rearing of such hypothetical dogmas is the justify-

ing purpose, or the ultimate goal, of ethnology and history. Yet, it is also justifiable that those not infected with such theories, should exact much and specific evidence before inclining any favor to the view that the fundamental organization of the society of the Zuñi and similarly constituted peoples was once on a clan basis.

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Badger.-

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I. KINSHIP.

In the following pages the meaning and use of the several kinship terms are discussed first, after which follows an analysis of the general features and inherent principles of the Zuñi system. References by number are to individuals in the genealogical table accompanying this paper. This table contains few names. The Zuñi do not like to tell the names of their kinsmen; and while the matter is interesting in itself, it appears to have no direct bearing on relationship. This reluctance of my friends made the work of compiling the table much slower than it would have been with a free use of names; but I did not care to press their scruples, and while two or three genealogies would have been preferable to one, this one seems sufficient to establish practically every trait of the system accurately. The Zuñi talk readily of each other's and their own clan affiliations, so far as they know them. These were recorded in the table. A dash in first position therefore means nothing more than that the name of the individual was not secured; but a dash in second place signifies that the informant, who is number 1 in the genealogy, did not know the clan affiliation of the person in question. The italicized figures following some of the clan indications give the approximate age of the individual in 1915. With a system of the type of the Zuñi one, this is important information which should have been obtained in every possible case, and even with other peoples age is a factor that on analysis may prove to be of more significance, in many instances, than has generally been assumed. I must apologize to my readers for the random order in the table of the numbers designating individuals; they represent only the sequence of the recording. I should have altered them to conform with the spatial arrangement of the genealogy, but for the increased liability of error in altering the figures, particularly in transfer between table, notes, and text, and in cross reference. As the genealogy is not over extensive, it may be that no serious inconvenience will be caused.

I write c for a sound of the sh type, tc for ch, L for surd l, 'after a vowel for the glottal stop and after a consonant for glottalization of the consonant. Final vowels are normally slurred and often unvoiced. The accent is invariably on the first syllable, with a weaker accent on the third in long words. An accented syllable either contains a long vowel or is followed by a lengthened consonant or by two consonants. Doubled letters for consonants, or two different letters, after the first and third vowels of a word, therefore indicate that these vowels are short; single letters, that the vowel

is long. For the few personal names in the genealogy, as well as for the native names of clans and ceremonial institutions in certain connections, a somewhat more European spelling has been followed, which needs no explanation. The symbol > may be read: "calls and refers to."

SUMMARY LIST OF TERMS.

Parent-child group

tattcu father; father's brother

tsitta mother inniha stepmother

There are no kinship terms for son and daughter

Grandparent-grandchild group

nanna grandfather; grandson

hotta mother's mother; granddaughter

wowwo father's mother; woman's son's daughter

Brother group

pappa older brother kyawwu older sister

suwe younger brother, of a male ikyinna younger sister, of a male

hanni younger brother or sister, of a female

Uncle-nephew group

kyakkya mother's brother

kyasse sister's child, of a male

kukku father's sister

talle brother's son, of a female eyye brother's daughter, of a female

hacci mother's oldest sister tsillu mother's younger sister

Husband-wife group, non-vocative

oyye wife oyyemci husband

Relations by marriage, collective

talakyi husband of female relative; kin of wife ulani wife of male relative; kin of husband

THE INDIVIDUAL TERMS.

TATTCU, FATHER.

Father; stepfather; father's brother; father-in-law; wife's stepfather; first or second cousin once or twice removed, of an older generation and actually older than oneself; sometimes, father's sister's son or mother's brother's son, that is, first cross cousin, but in the observed cases the "father" cousins were considerably older than the speakers. Like all Zuñi terms for which the contrary is not specified, tattcu is used by both males and females. The older or oldest brother of the father, or some similar relative, is often called tattcu-Lacci, old father, if he is of an actual age that might naturally put him in the grandfather class; while a distinctly young tattcu, either the father's youngest brother, or a cousin who is called father, is likely to be denominated tattcu-ts'anna, little father.

35>1: husband's father.

5's husband>1: wife's stepfather.

101>1: mother's mother's younger sister's daughter's husband, i. e., husband of first cousin once removed of older generation, also probably actually older than speaker. But while 101 calls 1 father and is called son by him, 101 and 7, the son of 1, are not older and younger brother, as might seem logically to follow, but 101 is kyakkya or mother's brother of 7. The difference of approximately twenty-five years between their ages seems to be felt as a barrier to their calling each other brothers; or possibly clan connection counts; for as older male of his mother's clan, 101 would be called kyakkya by 7.

110>7: father's father's mother's mother's younger sister's daughter's son, i. e., second cousin twice removed and two generations older; also actually nearly twenty years older.

11>34: father's mother's younger brother, i. e., great-uncle. By usual rule, 34 should be nanna, grandfather; but, either to emphasize that he is his sister's youngest brother, or because the actual difference of years between him and his grandniece is felt to be insufficient, he is termed father.

57>7: mother's older paternal half-brother's son, i. e., first half-cousin. The difference in age is about ten years, the "father" being the older. 57 applies this term to 7 only when he is living in 7's house, where 7's children call him elder brother; when 57 lives in his own natal home, he calls 7 younger brother, suwe, q. v.

28, 29>7: tatteu-ts'anna: father's older sister's son. This instance in conjunction with the last indicates that the occasional parent terminology for first cross cousins springs from the actual age of the persons involved — 7 is considerably older than 28 or 29; for while the usage in this instance is reciprocal, 7 calling 28 and 29 his daughters, the "father" in the last example is mother's brother's son to his "child" but here he is father's sister's son. If the parent terminology were the result of any exogamous reckoning, one of the two kinds of cross cousin should always be the parent, and the other kind the child.



12>6: tattcu-Lacci: father's older paternal half-brother.

11>27: tattcu-Lacci: father's mother's younger brother, i. e., great-uncle. 27 and 34 are brothers, but 34, who is only tattcu, not "old father," to 11, is perceptibly younger than 27.

TSITTA, MOTHER.

This term is applied to females standing in the same relationship to the speaker as the males called tattcu, except that it is not used to designate the stepmother, for whom there is a special word. There are also distinctive names for the mother's older and younger sister, hacci and tsillu, but these two terms do not replace tsitta, which is the more frequently employed.

7>3: mother; he speaks of her also as okkyatsi, the old woman.

57>35: mother's older paternal half-brother's son's wife, *i. e.*, first half-cousin's wife. As 57 calls 7, the husband of 35, tatteu only when living with him, it is probable that when he is at his natal home he refers to 35 as his ikkyinna; younger sister, because 7 then is his suwe, younger brother.

37>3: tsitta-Lacci, old mother: mother's older sister.

11, 12>35's older sister (non-Zuñi): tsitta-Lacci

7>19: tsitta-Lacci: mother's mother's older sister's daughter, i. e., first cousin once removed, of older generation.

41>5: tsitta-Lacci: mother's father's older sister's daughter, i. e., first cousin once removed, of older generation.

11, 12>35's younger sister (non-Zuñi): tsitta-ts'anna, little mother.

7>15: tsitta-ts'anna: mother's younger maternal half-sister.

3>19: tsitta-ts'anna: mother's older sister's daughter, i. e., first "parallel" cousin. The standard terminology for this relationship is kyawwu, older sister. A possibly considerable difference in actual age is probably responsible for the "mother" designation in this particular case. A characteristic instance of Zufii inconsistency on the side of pure logic is provided by the above-mentioned designation of 19 as tsitta-tacci by 7, the son of 3; parent and child both call 19 mother, viz., little mother and old mother.

TERMS FOR CHILDREN.

There is no specific kinship term in Zuñi for son, daughter, or child. Instead is used, in generic or collective references, tca'le, child, offspring, plural tcawe. More frequent, when particular persons are designated, are aktsekyi, boy, and kyattsekyi, girl. As people grow older, they come to be called tsawwakyi, youth or young man up to middle age, and makkye or makkyonna, young matron; but the designations aktsekyi and kyattsekyi sometimes persist.

As might be expected, those who call other persons "father" and "mother," are called "child" by them. Thus it is that a man's brother's children, and a woman's sister's children, as well as cousins one generation younger, are denominated children; but the looseness that pervades all Zuñi kinship terminology causes frequent departures from schedule. When two persons are separated in actual age by an interval that is felt to be too great or too little to be characteristic of successive generations, the designation of the younger as child is often replaced by some other term; or the younger person will be called child, even though not of the next generation, if the difference in years between him and the speaker seems appropriate.

7>28, 29: kyattsekyi: mother's younger brother's daughters or cross cousins. They are considerably younger than 7. See the reciprocal designation under "father."

35>28, 29: kyattsekyi. What the husband calls his kin, the wife calls them also.

2>7: aktsekyi: former husband's subsequent son. He calls her inniha-Lacci, old stepmother.

16>7: aktsekyi: mother's maternal half-sister's son, i. e., first "parallel" half-cousin, of same generation but younger than self. This designation among parallel cousins deprives the occasional parent and child terminology between cross cousins, which has already been discussed, of the last possibility of being explained by exogamic influences. It is clearly only because 16 is notably older than 7 that she calls him her boy or son. The reciprocal designation of 16 by 7 was not obtained; it seems that he must call her mother; but I was told, in another connection, that he would call her husband nanna, grandfather. Perhaps there was implication in my informant's mind of a specific but unacknowledged or former husband, who was still older than 16, and therefore of possible grandfather age for 7.

52>1: aktsekyi or tsawwakyi: stepson by husband's former wife. He calls her inniha, stepmother. As 1 is well over sixty, his designation even as "young man" is literally as inappropriate as that of his nearly middle-aged son, in the last instance, as "boy." It is clear that the words denoting children are not used strictly with their ordinary non-kinship significance when they are applied to relatives.

5>41: kyattsekyi: mother's younger sister's daughter's daughter, i. e., first cousin once removed, of younger generation and actually younger than the speaker. Reciprocal: tsitta-lacci.

1, 3>7, their son: aktsekyi, and 35, their son's wife: kyattsekyi, when 7 and 35 were first married; but as soon as a child was born, 7 was addressed and referred to only as an tattcu, 'its father,' and 35 only as an tsitta, 'its mother.'

1>the writer: tsawwakyi, and added: ho tomm tattcu, I am your father, when told that his nanna or grandson called the guest kyakkya, mother's brother.

1 spoke of Dikyi an makyonna, Dick's young matron, when referring to a woman whose father's American name is Dick.

INNIHA, STEPMOTHER.

A Zuñi stepfather is a father, but a stepmother is called inniha instead of tsitta. The same term is sometimes applied to the wife of a cousin of older generation, though in other instances such an older cousin-in-law is called mother, just as the wife of a cousin of one's own generation is a sister. There may be a principle that controls the choice between the appellations mother and stepmother in such cases; but it has not become apparent, and it is likely that we are dealing with another instance of Zuñi indifference to consistently detailed system. It is not known whether inniha is used only in reference or vocatively also.

1>52: father's second wife. Reciprocal: child.

7>2: inniha-Lacci, old stepmother: father's first wife. Reciprocal: child.

110>35: father's father's mother's mother's younger sister's daughter's son's wife, *i. e.*, wife of second cousin twice removed and two generations older. 35 is of an age that she might have been 110's mother. As she is the only wife her husband has had, her designation as stepmother is the harder to understand.

11, 12>25: father's mother's mother's older sister's daughter's son's wife, *i. e.*, wife of second cousin once removed of older generation. The husband of 25 may have been married before. It is conceivable that 11 and 12 knew the first wife as mother, and therefore look upon her successor as stepmother.

NANNA, GRANDFATHER, GRANDSON.

Grandfather; grandfather's brother or half-brother; collateral blood relative two generations older than the speaker, or sometimes one or three generations removed but of approximately a grandfather's natural age; greatgrandfather; subsequent or former husband of a grandmother; brother or half-brother of a grandmother, at least on the paternal side; presumably, a grandparent's brother-in-law; and, in general, the relatives standing in any of these relations to one's wife or husband; conversely, grandson, whether born of a son or a daughter, and whether a man or a woman is speaking; brother's or half brother's grandson, at least for a man speaking; collateral male blood relatives two generations younger or of approximate grandchild age; any greatgrandson; husband of a granddaughter; husband of a woman's sister's granddaughter; and, in general, the persons standing in any of these relations to one's wife or husband, and

¹ Terms for mother's mother's brother, and for a man's sister's grandson were not obtained. It is conceivable that they might be nanna, or respectively kyakkya (-tacci) and kyasse (-ts'anna).

the husband of any younger blood relative called hotta or granddaughter. *Nanna* is one of the two Zuñi kinship terms that are verbally reciprocal. It is often, but not exclusively, used with the additions -Lacci, old, and -ts'anna, small, when it denotes persons respectively of greatgrandfather and greatgrandson generation.

52>57: woman's daughter's son.

12 would>16's husband nanna: husband of father's mother's older maternal half-sister's daughter, i. e., husband of his first half cousin once removed. As this man would be of his father's generation, the terminology may spring from the fact that 12's father, 7, calls 16 tsillu, mother's younger sister, though she is of his own generation.

7>17: mother's older maternal half-sister's husband, i. e., maternal aunt's husband. As 17 is the father of 16, 7's calling him grandfather is consistent with his calling her aunt. The source of both designations is to be found in the appellation which 1, the father of 7, has for 17: he calls him kyakkya, mother's brother, either because he is his wife's older sister's husband and is actually the senior; or because they are members of the same clan, though not blood kin.

12>17: nanna-Lacci; this follows from his father 7 calling 17 nanna.

A son of 11 would call 1, his mother's father's father: nanna-lacci.

1 would call a son of 11, i. e., his son's daughter's son: nanna-ts'anna.

52>12: nanna-ts'anna: stepson's son's son.

1>14: nanna-ts'anna: son's son, 14 being an infant. This is one of two recorded cases where grandparent-grandchild terms with the suffix -Lacci or -ts'anna denote a grandparent or grandchild; in all other instances actually observed, the enlarged appellations applied to greatgrandparents or greatgrandchildren or collateral relatives of their class. The -Lacci and -ts'anna words seem therefore to have some specific implication to kindred removed from the speaker by three generations; but as always the Zuñi are inaccurate, and sometimes think of actual age instead of generations.

HOTTA, MATERNAL GRANDMOTHER, GRANDDAUGHTER.

Hotta is the second Zuñi kinship term which is verbally exactly reciprocal. It is used for females, by speakers of both sexes, exactly as nanna is for males; except that there is a special term, wowwo, for the father's mother and her collateral or ancestral female relatives. A woman's granddaughter is hotta when she is her daughter's daughter, wowwo when she is her son's daughter; but a man calls all his granddaughters hotta. It is curious that a verbally reciprocal term like hotta should be so flagrantly imperfect in its conceptual reciprocity; but there is of course a logical though less offensive lack of reciprocity in the two central meanings of nanna also.

57>52: mother's mother.

41>3: mother's mother's older sister.

3>41: younger sister's daughter's daughter.

15>37: younger maternal half-sister's daughter, i. e., niece. There may be an error in my notes here, since 37 was said to call 15 hacci, mother's oldest sister. If the record is correct, this is one of the rare instances of a pair of Zuñi relatives applying terms to each other which do not involve the same interval of generations.

WOWWO, PATERNAL GRANDMOTHER, WOMAN'S SON'S DAUGHTER.

This term denotes the father's mother; her mother; her sisters; her female cousins; presumably her brother's wives; presumably the former or subsequent wife of the father's father; and in general any female relative on the father's side older by two generations or the corresponding age than the speaker; also, presumably, the same relatives of one's wife or husband. It also denotes a woman's son's daughter, thus being a verbally exactly reciprocal term.

7>52: father's stepmother.

- 11, 12>52: wo-Lacci (children's abbreviation for wowwo-Lacci): father's father's stepmother, i. e., paternal greatgrandmother.
- 11, 12>15: wowwo-Lacci: father's mother's older maternal half-sister, i. e., great-aunt.

52>11: wowwo-ts'anna; stepson's son's daughter.

BROTHER AND SISTER RELATIONSHIPS.

The same lack of symmetry that appears in the three Zuñi terms for four or eight kinds of grandparents, crops out in their brother-sister nomenclature; eight possible relationships and five words. A man uses four of these, a woman three. Of the three usually recognized factors involved in this class of kinship, sex, sex of the speaker, and relative age, all three find expression, but only one, age, is expressed in all of the terms.

All five of the names for brothers and sisters denote: —

- 1. Children of the same father and mother.
- Half-brothers and sisters.
- 3. Presumably also stepbrothers and sisters, that is, persons one of whose parents married a parent of the other.
- 4. First, second, or third cousins, or any collateral blood relatives, either on the father's or mother's side, of the same generation as the speaker; or, if of an actual age that would be normally compatible with their being full brothers or sisters to each other, even of a generation older or younger. There are some instances of cousins calling each other by terms not of the brother-sister class, but in these cases there is

an intruding factor, such as a marked difference of age between the cousins, or between their parents or ancestors who first disregarded the equality of generations.

- 5. The husband of any "sister," or wife of any "brother," according to the preceding four definitions.
- There is also application of the terms to non-kindred clan members of an age approximating that of the speaker.

The fourth and fifth of these classes of "brothers" and "sisters" allow theoretically of several applications of the age factor which the Zuñi by his terminology shows to be uppermost in his mental processes.

As for brothers-in-law and sisters-in-law, the rule is to consider not the age, compared to one's own, of the acquired affinity, but of the relative married to the affinity. The wife of an older brother may be younger than oneself, but she is an older sister nevertheless.

As for cousins and the like, it is clear from the examples, as well as from the statements of the Zuñi, that in the case of the descendants of a brother and sister, actual age is again not regarded, but the woman's offspring is reckoned as the older. The priority of the female line finds expression in attributed seniority.

It would be illuminating to know definitely what the Zuñi would do if the sex of successive generations alternated in the line of descent; which of two second cousins, for instance, would be the older if one were sprung from the son of a sister and the other from the daughter of a brother. In the absence of evidence, it may be conjectured that the seniority assumed between the first cousins would be handed down to and repeated by their children, and so on for succeeding generations; until the original brother and sister being forgotten, a reversal of terminology might ensue to accord with the more recent part of the genealogy. Moreover, if in the lapse of time there came to be persons of quite different age within the same generation, the brother-sister seniority between them would certainly be replaced by one of the parent or uncle or even grandfather class. It would be interesting to follow out a few such cases in full detail. An ideal scheme is as important as it is easy to grasp, but its true place in the life of a people becomes intelligible only in the light of the complications, difficulties, and exceptions it encounters. It would be fascinating if the Zuñi had been better able than we to devise systems that met all conditions logically; but there is no reason to believe it.

As between collateral relatives into whose kinship status the sex of their ancestors does not enter, such as cousins descended from two brothers, or from two sisters, absolute age and not seniority of the parents is normally the deciding factor in the names they give each other; but the degree of actual adherence to this plan is also not known.



PAPPA, OLDER BROTHER.

7>34: mother's younger brother, i. e., uncle. Strictly, this man should be called kyakkya. He is perhaps ten or more years younger than his sister, but probably twenty years older than his nephew. Possibly a difference of age between him and an older brother (number 27) was sufficiently felt to make one designation for them seem inappropriate; or there may be some unknown personal factor.

7>18: mother's mother's older sister's daughter's son, or second cousin, older than the speaker. The explanation rendered was that of their two maternal grand-mothers, that of 18 was the older sister.

34>32: father's younger sister's son, or first cross cousin. This is an interesting case because the "older brother" is twenty-five or thirty years the junior, and his mother is also younger than 34's father. The reason given was that "the father of 34 came out of the house of 32," which is of course the house of 32's mother and of the mother of 34 himself. In other words, the determining factor to the native mind in this instance is the house, the concrete expression of the female element in blood kinship: the clan is not even thought of.

7>6: older paternal half-brother.

12>9, 10: father's older paternal half-brother's sons, or first half-cousins. The reason given was that the father of 9 and 10 is older than the father of 12. This is a more convincing case than the above relationship of 7 and 18, because 12 appears to be intermediate in age between 9 and 10.

7 calls the husband of 5, his older maternal half-sister, pappa, in addressing him "because 5 is older than 7." In referring to 5's husband in his absence, 7 speaks of him either as pappa or honawan talakyi, our son-in-law.

37>18: mother's mother's older sister's daughter's son, or second "parallel" cousin. 18's grandmother was older than 37's, but he himself is also older.

30>1: older brother's daughter's husband, *i. e.*, nephew-in-law. But as 1 is older than 30, the latter may feel it inconsistent to call him child or woman's brother's son according to rule. Also, 1 and 30 are hamme or members of the same clan, though they deny being iannikyinnawe or blood kindred; and it is therefore still more likely that 30 called 1 her older clan brother long before they became connected by marriage. Reciprocal, kyasse, q. v.

7>32: pappa or pappa-ts'anna, little older brother: mother's father's younger sister's son, or first cross cousin once removed. Actually the speaker is the senior by a dozen years. The -ts'anna probably indicates to the Zuñi that 32 is in fact the younger. His being the pappa would be in accord with his being descended from the sister and 7 from the brother; but in addition he is a generation older. The father of 7, 1, calls 30, the mother of 32, kyasse, sister's child, on the basis of their being members of the same clan.

11 and 12, the children of 7, call 32 by two terms. Sometimes he is their tattcu or father, which is logical in view of the fact that he is reckoned their own father's brother. Sometimes they call him pappa, which accords nicely with the real ages of all concerned. As this varying terminology for the same person reveals the complete Zuñi indifference to the factor of generation when there are other considerations, it is not surprising that these children do not dream of calling their playmate nanna merely because there is a generic underlying principle that any male two generations older is a grandfather.

7>57: pappa-ts'anna, little or younger older brother: father's younger paternal half-sister's son, or first half-cousin. The older brother is about ten years younger, but again he is in the female line of descent. It must be added that 7 uses this designation only in 57's house; when 57 lives with 7, as often happens, 7 becomes the father instead of the younger brother.

11 and 12, the children of 7, call 57 pappa, and he reciprocates by calling them younger sister and younger brother; apparently because in their house their father is also his father. The actual ages also accord well with this designation.

11 and 12 call 58 and 59, the half-brothers of 57: pappa. The simplest explanation is that if 57 is their brother, his brothers must also be their brothers. Again the ages fit. Actually 58 and 59 are the father's father's younger paternal half-sister's sons, or first half-cousins once removed, of 11 and 12.

57>6: pappa-ts'anna: mother's older paternal half-brother's son, or first half cousin. Here the principle of seniority being attributed to the female line is violated. As according to this principle 57 should call 6 his suwe or younger brother, we may conclude that he calls him pappa instead because 6 is in fact considerably older, or because he is the older brother of 7 with whom 57 stands in a personal relation of especial intimacy; and that he adds the toning down -ts'anna in consequence of a compromising concession to the principle he has just violated. If this inference is correct, -ts'anna would in this instance not denote, as is customary, actual juniority, but would represent the fictitious juniority of the male line.

The term pappa-lacci was stated to be applied to the oldest brother, as distinct from any older brother; but no examples of its use were obtained.

KYAWWU, OLDER SISTER.

18>16: mother's mother's younger sister's daughter's daughter, i. e., second parallel cousin. 16's grandmother was younger than 18's, but 16 is older than 18; in fact he sometimes calls her tsitta, mother, instead of elder sister.

7>25: mother's mother's older sister's daughter's son's wife, i. e., second cousin's wife. The simplest explanation is that 7 calls 18, who is his blood kinsman, older brother, and therefore regards 18's wife 25 as his older sister.

11>28: father's mother's younger brother's daughter, or father's first cross cousin. The father, 7, calls 28 his daughter; starting from this fact, it is only logical that his real daughter 11 should call 28 sister; and as 28 is the older, that she should call her older sister.

7>37: mother's younger sister's daughter, or first parallel cousin. As 37 has the younger mother, she must be kyawwu because she herself is older than 7.

37>5: mother's older sister's son, or first parallel cousin. This relationship is the opposite of the last, and the identical terminology establishes that for parallel cousins the Zuñi consider the seniority of the cousins themselves and not that of their parents. 5 is older than 37.

7>5: older maternal half-sister. In referring to her, he sometimes calls her okkya, q. v.

35 called 5 kyawwu when she was first married to 5's younger half-brother 7. After the birth of their first child, 11, both 7 and 35 ceased calling her kyawwu and addressed her as an kukku, 'its father's sister.'



A man married to a girl will call her, before the birth of his first child, awan kyawwu, 'their older sister,' that is, older sister of the children in the natal home, her younger brothers or sisters.

SUWE, YOUNGER BROTHER OF A MAN.

34 > 7: older sister's son. Reciprocal, pappa, q. v.

32>7: mother's older brother's daughter's son. Reciprocal, pappa, q. v.

32>34: mother's older brother's son. Reciprocal, pappa, q. v.

57>7: mother's older paternal half-brother's son. Reciprocal, pappa, q.v. 57 also calls 7 tattcu, q.v.

57>12: mother's older paternal half-brother's son, i. e., child of 7 in the last example. Reciprocal pappa, q. v.

1>36's husband: wife's younger sister's husband.

12>13: younger brother.

18>7: mother's mother's younger sister's daughter's son. Reciprocal, pappa, q. v.

13>111: father's mother's mother's older sister's daughter's son's son's son, i. e., third cousin once removed of younger generation but older than the speaker. Actually, the two boys appear to address each other by their American names, but it was stated that if they employed kinship terms, 13, though younger, would call 111 younger brother "because the father of 111 calls the father of 13 older brother or father." This explanation is of interest as another instance of the fact that the Zuñi has his own interpretation of his rules of kinship as well as his own rules, and that we cannot understand or even know his practices through merely learning his avowed formal principles of society and then applying them.

IKKYINNA, YOUNGER SISTER OF A MAN.

1>36: wife's younger sister.

57>11: mother's paternal half-brother's son's daughter, i. e. first half-cousin once removed, younger than self. He calls her father either younger brother or father.

12, 13>24: father's mother's mother's older sister's daughter's son's daughter, or third cousin. The reason given was that 12 and 13 are themselves older than 24. On the other hand, their father is younger brother to 24's father.

HANNI, YOUNGER BROTHER OR SISTER OF A WOMAN.

11>13: younger full brother. Used both in address and in reference.

15>19: mother's older sister's daughter, or first parallel cousin.

37>7: mother's older sister's son, or first parallel cousin. In both this case and the last, the reason for the terminology must be that the speaker herself is older, since her mother is younger.

5>37: mother's younger sister's daughter, or first parallel cousin younger than self and born of a younger mother.

11>111: compare 13, the younger brother of 11, calling 111 suwe.

110 "would" call 11: father's father's mother's mother's younger sister's daughter's son's daughter, or third cousin once removed of older generation than the speaker. The reason given was that 110 is older than 11.

KYAKKYA, MOTHER'S BROTHER.

This term covers not only the mother's brother but a variety of collateral relationships. In all cases, however, it refers to a male relative of the mother older than the speaker. It is also used for older unrelated males of the mother's, that is, of one's own clan.

7>27: mother's younger brother.

29, 41>7: mother's father's older sister's son, *i. e.*, first cousin once removed, of an older generation and older than the speaker.

39, 41 > 18: mother's father's mother's older sister's daughter's son, *i. e.*, second cousin once removed, of an older generation and actually older.

7>101: mother's mother's older sister's daughter's son, or second cousin. 101 is at least twenty-five years older than 7. The connection between them is entirely through female relatives. This makes them members of the same clan. Those addicted to thinking of primitive people in terms of clan status, will recognize in this terminology a reflection of clan fellowship. I do not see any need of going beyond kinship in the search for an explanation. 101 is an actually older relative of 7 through 7's mother. This is enough to make him 7's kyakkya for the Zufi, who care little, in their nomenclature, about nearness and remoteness of collaterality or the exact number of generations by which each of two kinsmen is descended from their common ancestor.

1>17. Here, on the other hand, is an instance of a term applied because of clan membership. 17 is the husband of 1's wife's older half-sister; but this, according to Zuñi rule, would make him 1's older brother, if it made him anything, and not his mother's brother. They both belong, however, to the Badger clan; and there can be little doubt that it was on account of this clan fellowship, and this alone — for 1 specifically denies any traceable blood kinship — that 1 was in the habit of denominating 17, his presumably older clan mate, kyakkya before they became married to sisters, and that he continued this appellation subsequently. But the point that obtrudes is that 1 and 17 reject consanguinity, while 7 and 101, who are also clan mates, avow and specify it. As long as the simpler and more commonly applicable explanation by kinship is available, it seems strained, accordingly, to extend the clan principle of interpretation to such cases. This contention will no doubt be readily admitted for the particular case in question, and perhaps for Zuñi kinship terms in general; but it is just as valid as a general working method, though it is a method that has frequently not been followed. It seems a fair requirement that the burden of proof should a priori always be on him who interprets so near and universal a phenomenon as kinship recognition in terms of so rare, variable, remote, and peculiar an institution as the clan or exogamous subdivision of a community. If it had not been the prevalent fashion to look upon ethnological facts primarily as a field in which an inclination to formulate theories could find easy exercise, this



principle would not only have been long ago conceded, but more frequently lived up to.

13>the writer: mekkyekkye, for me-kyakkya, that is, "American mother's brother." As a member of the household not married into it, my status was clear; I could only be blood kin of the woman of the house. The choice therefore lay between grandfather, mother's brother, and brother; and the middle term was obviously the most appropriate in view of our ages. The boy of six who seems to have spontaneously originated this appellation, certainly was not concerning himself with my clan membership, in fact probably had never thought of it; but he was thinking in terms of my relation to the inmates of the house. On the other hand, my actual ikkyinna, who should therefore have been his "mother's younger sister," tsittats'anna or tsillu, was very inconsistently called kyawwu or older sister by him and his brother and sister.

KYASSE, MAN'S SISTER'S CHILD.

Kyasse and kyakkya are the only kinship terms in Zuñi which are conceptually exactly reciprocal. As they are both derived from the stem kya-, the one by reduplication like nanna, wowwo, pappa, the other by an unexplained suffix -se which can hardly be much else than a diminutive in force, whatever its origin, their verbal reciprocity also is at least substantially complete. It is possible that their common stem is the same as that of kyawwu, older sister.

101 > 7: reciprocal, kyakkya, q. v.

27>7: reciprocal, kyakkya, q. v.

27>37: man's younger sister's daughter.

1>30: the reason given was that "he is older than she." As they are not blood kin, the unexpressed part of the explanation is that they belong to the same clan. That she happens also to be his wife's father's younger sister is a subsequent accident that can hardly have been the cause of the nomenclature, since kyasse, so far as it refers to generation, denotes a person of younger generation, whereas the woman in question, though junior in years, is of the generation older than the speaker. Reciprocal pappa, q. v.

KUKKU, FATHER'S SISTER.

Besides the actual sister of the father, the term kukku applies also to the father's first or second cousin, or his niece, or cousin of a younger generation. It does not always refer to persons older than the speaker; but it does always denote a female relative of the father. Talle and eyye taken together are the conceptual reciprocal of kukku. Kukku is also applied to any woman considerably older than oneself who is a member of one's father's clan.

12>5: father's older maternal half-sister.

3>30: father's younger sister; younger than the speaker.

7>30: 7 is the son of 3. He presumably does not call 30 kukku because of his blood relationship to her, but because his father 1, is a clan mate though not blood kin of 30. On this basis of membership in the same clan, 1 is the older brother of 30; and a following out of this terminology makes 30 the kukku of 7. On the basis of true consanguinity, 30, as a female two generations older than 7 and related to him through his mother, would apparently be his hotta or maternal grandmother. It may be conjectured that the terminology based on clan connection with the father was in this instance given precedence over the blood relationship through the mother, because of the ages of the parties: 30 does not seem very much older than 7, and is obviously not his senior by the normal interval of a grandmother.

11, 12>16: father's mother's maternal half-sister's daughter, or father's first cousin.

28>37: father's younger sister's daughter, or first cross cousin, older than self. The usual term in such cases seems to be older sister.

11>37: father's mother's younger sister's daughter, or father's first parallel cousin.

11>41, the daughter of 37: kukku-ts'anna, "little kukku": father's mother's younger sister's daughter's daughter, or second cousin, actually younger than the speaker. The theoretical nomenclature would be "sister"—either "older" because 11 is related through her father and 41 through her mother, or "younger" because 41 is younger than 11. The term really used seems to have been transferred by 11 from 41's mother to 41 herself, with a characteristic qualification in the appended "little." Once the shock to consistency is eased by such devices as this suffix, a wide range of terms becomes about equally suitable for any given type of relationship according to a variety of considerations.

TALLE, WOMAN'S BROTHER'S SON.

This term is the male, as eyye is the female, reciprocal of kukku, father's sister. In ceremonial usage it is reciprocal to tattcu, father. When a gift is made to an old man, he says: "tallemo," and is answered "tattcumo." It is curious that the stem talle should be used ceremonially by males, and in daily life only by females. A possible connection of the terms talle and talakyi is commented on under the latter head. It is also not unlikely that talle is etymologically connected with tattcu, father: in this case its original meaning would probably have been son or possibly man's child, and the ceremonial tallemo would be a survival.

5>12: woman's younger maternal half-brother's son.

EYYE, WOMAN'S BROTHER'S DAUGHTER.

Eyye is the female reciprocal of kukku, whether the latter denotes the father's own sister, a collateral female relative of the father, or the daughter of the father's own sister.



5>11: woman's younger maternal half-brother's daughter. Reciprocal, kukku. The sister of the father of 32 calls the sister of 32 eyye and is called kukku by her.

41>11: woman's mother's mother's older sister's son's daughter, i. e., second cousin of speaker's generation but older in years. Reciprocal, kukku-ts'anna, q, v.

It was stated that a girl called her mother's brother's daughter either eyye or hanni, younger sister. The former would obviously be an extension of her mother's own designation for the young woman in question.

HACCI AND TSILLU, MOTHER'S SISTERS.

The sisters of one's mother are mothers in Zuñi: tsitta-Lacci, old mother, and tsitta-ts'anna, little mother, are often used to designate the sisters older and younger than the own mother. In addition, there are two terms, hacci and tsillu, which have the same meaning, but are not very frequently employed. Hacci in particular was not heard used: informants volunteered the term and stated that it meant the same as tsitta-Lacci, except that it was restricted to the oldest one of all the mother's sisters. Tsillu perhaps is any younger sister of the mother; it is also applied to the tsillu's daughter, at least if her youth is not too discordant — much as kukku is.

The status of these two terms, especially hacci, appears to be analogous to the condition of Hano Tewa tutu'un, father's brother, which "may be" used in place of tada, father or father's brother. Similarly, just as the reciprocal of Hano tutu'un is "obsolescent" or rarely employed, so Zuñi hacci and tsillu have no reciprocals of their own, but call their sister's children simply children.

Tsillu is probably from the same stem as tsitta, mother.

37>15: hacci: mother's older (and oldest) maternal half-sister. The reciprocal in this case was said to be hotta, granddaughter.

37>16: tsillu: the daughter of this hacci 15. 16 is older than 37. The difference in years between the oldest and the youngest child of a Zuñi mother is likely to approximate a generation, a consideration which may be suspected to have been of influence upon the terminology in this and similar cases.

7>16: tsillu: mother's older maternal half-sister's daughter, or first half-cousin older than the speaker. The relationship is the same as that of 37 to 16. This is 7's only tsillu, at present; presumably he called 36, his mother's younger full sister, tsillu while she lived.

TALAKYI.

The inmates of a house, apparently the men married into as well as the men born and the women living in it, call a young man married to a girl inmate: talakyi. He in turn calls them his talakwe, -kwe meaning people. He also speaks of their home which he has entered as his talawa; -wa is a

locative ending. The term talakyi is really generic, since even house mates younger than the bridegroom, and his father-in-law, who originally himself was, and to his elders still is, a talakyi in the same house, call the newcomer talakvi. The term therefore transcends both the matrilinear principle and the kinship factors most important in the Zuñi mind, and illustrates pregnantly the influence of the house. At the same time the word may be a true kinship term in origin. It is probably connected with talle, denoting a woman's brother's son, which in turn appears to be from the stem of tattcu, father, used in the quasi-reciprocal sense of son. The talakvi was therefore in the first place the new son of the household; and, after the word had crystallized into this significance, the inclination toward reciprocity, which in spite of its formal looseness is so deep set in the Zuñi mind, began to operate, until the "son" named the members of his new home by a collective form of the same term. A derivative of the same stem, takkyikwe, has come to mean an entirely different thing, the people of one's father's natal home.

As talle 1 is a woman's brother's son, and talakyi a son-in-law or bridegroom, the similarity of the terms might be interpreted as indicative of a present or former identity of the persons. This would mean that a woman's brother's son came into her home to marry her daughter, his cross cousin. The Hopi are said to recognize and practice cross cousin marriage, and the Hano have customs which on their face can be interpreted equally well as surviving vestiges or incipient rudiments of the same institution.² The Zuñi, however, like the Acoma, scorn the imputation of this practice; and the interpretation first given of the history of the meaning of talle and talakyi seems far more consonant with their customs and sentiments. As regards the Hopi and their neighbors the Hano, it will require much more information than is now available to determine whether their traces of cross cousin marriage represent a sporadic, secondary, and perhaps recent influence, or are remnants of an old and fundamental set of institutions.

The husband of 5 calls her natal house, in which her mother 3 still lives, though 5 herself maintains a separate establishment, talakwe.

^{1&}gt;5's husband, his wife's daughter's husband: talakyi. The vocative reciprocal is tattcu, father.

^{7,} the son of 1, might also call ³ the husband of 5, his older maternal half-sister: talakyi, though both 7 and 5 have left their natal home and the husband of 5 would presumably be considerably the senior of 7.

¹ Perhaps talla: Zuñi final e usually proves to be a when carefully pronounced.

² Barbara Freire-Marreco, American Anthropologist, N. s. xvi, 286, 1914.

In reference only; vocatively he would say pappa, older brother.

⁴ This probably means the inmates of the house.

26>17, his wife's daughter's husband: talakyi.

1, to explain why he did not know more about 20, his wife's mother's older sister, and her husband 120, said: tommt ho awan talakyi, I am only their son-in-law.

This old couple, 20 and 120, he further stated, would call him k'oloktakwe awan talakyi, Crane-people's son-in-law, on account of his marriage to their daughter 3 of the Crane clan. This expression is exactly parallel to the commoner one by which a person calls himself the child of his father's clan: ho tonnacikwe, ho piktcikwe awan tca'le, I am Badger-person, I am Dogwood-people their child, 1 would say of himself in Zuñi usage.

yam talawe ime means that a man is living, or that he is momentarily, at the house which he joined at marriage, literally: "his-own at-place-of-relatives-by-marriage he-sits."

Talekyanna was once recorded with the usual meaning of talakyi. It appears to be an objective case form.

ULANI.

Correlative with talakyi is ulani, specifically the son's wife, or the wife of a man who was born and reared in one's home but has married out; and reciprocally, in its collective form ulakwe, the term is used by the girl for the relatives or former house mates of her husband.

1>35: ulani. Reciprocal, tattcu.

35 calls the house of 3, or its inmates: ulakwe.

ula ime, "in-the-house-of-her-parents-in-law she-sits," is said of a woman who contrary to custom abandons her own home to follow her husband to his. There are a number of such marriages in Zuñi at present: family quarrels, jealousy on the husband's part, and perhaps other causes, are cited as motives. It is said that the number of women living in their husband's house is increasing. This may be so; but the practice, though irregular, is old. It is discussed again in the section dealing with the clan.

TAKKYIKWE.

The takkyikwe are the people of the father's house, on whom devolves the washing and burial of the corpse, though scarcely any one ever dies in his takyinna or father's residence: men live in their talawa or wife's home, women and children in their kyakkwe or mother's house, literally simply house. Takkyikwe must of course be derived from the stem of tattcu, father.

OTTSI-NAWA.

Ottsi-nawa is a term used by any sister for her full, half, or collateral brothers, irrespective of seniority or juniority. The form is plural or collective; the specific singular is ottsi, which means literally "male."

Ottsi is supplementary to pappa and hanni, never excluding persons so called; and it is used only in reference, not vocatively.

12 is 11 an ottsi, "11 her brother"; 13 is the same.

5, 37>7, 18: ottsinawa. Here are included a half-brother, a cousin, and two second cousins. The estimated ages are: 5, 45; 37, 35; 7, 35; 18, 45

OKKYA-NAWA.

Reciprocal with ottsi, ottsinawa, is okkya, collective okkyanawa, denoting any sister of any brother. This is nothing but the common word for old woman, okkya, also okkya-tsi, okkya-tsi-kyi, okkya-Lacci. As a pseudo-designation of kinship it is perhaps not entirely restricted to sisters.

7 addresses 5, his older maternal half-sister, as kyawwu; he refers to her either as kyawwu or as okkya.

7 refers to 37, his mother's younger sister's daughter, of about the same age as himself, as okkya.

He speaks of 5 and 37 as his okkyanawa.

He also may speak of his mother, 3, as okkyatsi, "the old lady."

11, age 13, is the okkya of 12, Chipai'u an okkya.

LACCI-NAWA.

Lacci is an old man: Lacci-nawa are one's "old folks." One would not think of addressing his elders thus; but one sometimes designates them so.

7 and his wife 35 would include under Lacci-nawa 1, the father of 7; 3, the mother of 7; 27, her younger brother; 34, her youngest brother; and, as occasion required, other senior relatives.

IANNIKYINNA, HAMME.

The Zuñi say: —

hom iannikyinnawe, all my relatives ho'nawan iannikyinna, we are blood kin ho'nawan hamme, we are of the same clan

Annikyi is a verb meaning "to address by a term of relationship"; i-, a reflexive and reciprocal prefix. When a Zuñi wishes to specify a blood relative as opposed to a co-member of his clan, he employs this particular term; but he will refer to his clan mates by designations of relationship exactly as he refers to his blood kin. It is a curious linguistic contradiction.

Similarly, when a Zuñi is asked the meaning of hamme, he does not

answer "alike," as we should expect, but "another." The denotation of the word seems to be "another one of the same kind."

HUSBAND AND WIFE TERMS.

Oyye is wife and oyyemci husband. These are however explanatory or descriptive terms. A Zuñi woman appears to call her spouse "oyyemci" to his face as rarely as an American wife addresses her mate as "husband." Occasionally husband and wife will call each other okkyatsi or okkyatsikyi, old woman, and Laccikyi, old man, especially if their first child has not yet been born. In conformity with the prevalent teknonymic practices of the Zuñi, the universal form of address, and apparently of reference also, after the birth of a child is: an tsitta, its mother, and an tattcu, its father; and the house mates know the couple by the same term. One informant, asked how a childless husband addressed his wife, replied that he "does not call her anything."

CEREMONIAL KINSHIP TERMS.

Mrs. Stevenson 1 mentions several kinship terms uttered reciprocally by the recipient and the donor of prayer plumes at a certain point of the winter solstice ceremonies. Informants stated that this usage appertained to the kokko, that is, the gods or the dancers impersonating them, in other words, that it was ritualistic. I found that many old men were wont to say tallemo when a gift of tobacco was made to them even on a profane occasion, and to expect the answer tattcumo. The suffix -mo seems regular under the circumstances. These ritualistic and semi-ceremonial terms are of interest because they comprise several that do not occur in ordinary life, or are used then with different meaning. The following information was recorded on the terms cited by Mrs. Stevenson.

[&]quot;tätchumo, father": tattcu, father.

[&]quot;tälemo, father's brother's son": in ordinary usage, talle is brother's son, a woman speaking; ceremonially, tallemo is the reciprocal of tattcumo. This probable original significance of this word has been discussed under talakyi.

[&]quot;papamo, older brother": pappa, older brother.

[&]quot;suemo, younger brother": suwe, younger brother of a man.

[&]quot;käkiamo, mother's elder brother": kyakkya, mother's brother, older or younger.

[&]quot;käsimo, mother's younger brother": kyasse, sister's son or daughter, man speaking.

¹ Bur. Amer. Ethn., Ann. Rep. xxiii, 132, 1904.

- "nanamo, grandfather"; nanna, grandfather.
- "toshlimo, grandson": ceremonial, tocle-mo.
- "ällimo, greatgrandfather": ceremonial, alle-mo.
- "uwaikiämi, greatgrandson": ceremonial uwakya-mo.

The last three terms have only a ceremonial usage. Two of them contain the same ending as ta-lle. Several of Mrs. Stevenson's definitions do not agree with the usual meanings of the terms. The nature of the differences is such that her variants seem more likely to be inaccuracies than distinctive ritualistic usages, but a religious survival of ancient denotations is possible.

The following is an instance of ceremonial employment of kinship terms apart from the presentation of gifts. Lamicio, age about 40, is of Pikchikwe clan, child of the Badger clan. He is on terms of close friendship with the present governor. There appears to be no kinship between them; but Lamicio's father is a clan mate of the governor's father, and a remote consanguinity may possibly still be traced. Lamicio manifested an interest in the governor's son Chipai'u, now eleven years old. They washed each other's heads and gave each other presents. This made them pappa and suwe, older and younger brother; and Lamicio was also the boy's kihhe. When Chipai'u was to be made ko-tikkyilli, a member of the Zuñi tribal religious organization or ko-tikkyanne, native custom required adaptation; for this provides that the initiate "must join the ki'witsine (kiva, estufa) of the husband of the doctoress who receives him at his nativity," 1 and Chipai'u had been brought into the world by the government physician. Choice of a godfather was accordingly necessary; and Lamicio was selected. This made him tattcu, father, to Chipai'u.

Lamicio's mother being dead, he lives at his father's house; at least this was the reason given. In this house lives also an older man, Wallella, who is married to Lamicio's kukku, his father's sister. This kukku assisted Lamicio in his initiation of Chipai'u into the ko-tikkyanne; therefore her husband Wallella is Chipai'u's nanna, grandfather, or tattcu, father; he seems to call him both.

ABBREVIATIONS.

A number of the kinship terms for elders are often abbreviated, or more exactly, altered, in the mouths of children by the substitution of -mme for the final syllable. Thus namme, womme, kumme, tamme, for nanna, wowwo, kukku, tattcu. These forms are considered familiar, if not dis-

¹ Ibid., 65 I was told that there is often rivalry among the several midwives present to touch the child first, each wishing to secure the future initiate for her husband and his kiwwitsinne.

respectful; for I was told that old people did not like to be called by them, at least in public. But this feeling is not universal, and the clipped terms are even used by elders toward children. Number 12 in the genealogical table, for instance, is sometimes addressed as namme by certain old men when they meet him in the town; 13 also calls 1 namme instead of nanna without protest; and his mother 35 was heard addressing the old man by the same term in calling him to come to eat. This is exactly like an American mother speaking to her father-in-law as "grandpa."

TEKNONYMY.

The commonest way of designating people among the Zuñi, either in reference or address, is to state their relationship to a younger person. one informant put it, "the child always comes first." Thus 1 is commonly known either as Luis an tattcu or Bili an nanna, father of 7 or grandfather of 13. Often this leads to a non-usage of the term denoting the immediate relationship between the speaker and the person in question; for instance between husband and wife, as mentioned above. The basis of the practice, however, seems to be a very strong inclination to avoid using a person's name. A child's name, which has no religious participation, and at present preferably his American name, are used more freely. Even for adults the Zuñi employ their American or Spanish names, when they have them, and so far as they can pronounce the sounds: these designations are conveniences, but they are not real names to the native. A Zuñi name is far too intimately personal and sacred a thing to be bandied about. label than a part of the man, which one no more thinks of handling without specific reason — at least to his knowledge — than his body or his private god mask.

When 7 and 35 were first married, 1 and 3, the parents of 7, called him aktsekyi, boy, and her kyattsekyi, girl, that is, son and daughter. The couple addressed 7's older and childless sisters as kyawwu. As soon as 11, the oldest child of 7 and 35 was born, 1, 3, and 5 all spoke to and of 7, their son and brother, as an tattcu, her father, i. e., the baby girl's father. 35 similarly became an tsitta, her mother, and 5 an kukku, her father's sister. This terminology continues to the present day, though with the birth of subsequent children the implied reference may be to younger brothers of 11. The appellations are used both in reference, and vocatively: 35 and 7 habitually address each other as an tattcu and an tsitta. 35 in speaking to 1, her father-in-law, refers to her husband 7 as (Bili) an tattcu, (Billy's) father.

A newly married childless man calls his wife an tsitta, 'its mother,' referring to her sister's child in the same house: literally, "(her sister's child) its maternal aunt." If his wife has no married sister or sister's child, but has younger brothers or sisters,

the husband speaks of her as an kyawwu or awan kyawwu, "his (or her or their) older sister."

5, who is childless, lives with her husband in the latter's natal home, though this is contrary to Zufii custom. The inmates of the house call her awan tsillu, 'their mother's younger sister,' referring to the children of her husband's sister, to whom the husband of course is kyakkya. When the couple come to the house of 7, the younger half-brother of 5, the husband calls his wife awan kukku, 'their father's sister,' with reference to the children of 7.

KINSHIP TERMS AMONG CLAN MEMBERS.

The Zuñi apply kinship terms to all clan mates. But true blood relationship and clan relationship are never confused in the native mind, however confusing the identity of terminology may appear to us. Ministers of religion and of social reform among ourselves have a habit of dealing widely in words like 'brother' and 'sister' without even making us think of kinship. The Zuñi state of mind appears to be very similar. One knows perfectly well who is one's blood relative and who is not. The definiteness of that knowledge in fact is what makes the wider use of the terms possible without inconvenience. A small child knows nothing of clans or his own clan affiliations; but he knows the grandfather who takes him up to play, and the man or men in the house, or constantly visiting in the house, whom he calls kyakkya. Later, he comes to call other men, with whom he is but little in touch, kyakkya also; and in time he learns that the former are his iannikyinnawe or kin and the latter his hamme or members of something called his annota or clan. By the time he is grown, there is no possibility of uncertainty or error. Each individual's personal status with relation to oneself is clear and fixed, and it matters very little what any and all of them are called. The case is very much like that of the occasional American who addresses his wife as 'mother' or 'sister' or 'sis': it is exactly because she is his wife that he can afford to call her sister. That he speaks to her as 'sister' and not as 'uncle' has undoubtedly a good psychological reason. It is the way the human mind works, or we might better say, the human mind expressed in its social channel language; but there is no institutional factor connected with marriage or descent, that determines the choice of 'mother' or 'sister.' I cannot see anything else in the Zuñi application of kinship terms to clan members.

I realize that this is not the interpretation commonly put on phenomena of this kind in many ethnological quarters. But it seems the only reasonable and unconstrained interpretation of the Zuñi facts; and I believe it to be the wisest explanation for facts of a similar nature in general, until



something develops, in each particular case, that may demand revision of opinion.

If Zuñi kinship terminology originated in the clans and were only secondarily applied to blood relatives, it would have to be assumed that the religious fraternity was also older than the family: for every member of one's fraternity is a brother, a father, or a son; or, if a woman, a corresponding female "relative." If, on the other hand, kinship terms in the fraternity are secondary, it becomes exceedingly difficult to see why the clan terminology should not also be mere subsequent applications extended from the blood kindred. The only reason for not accepting the alternative would be the demonstrable fact, or the conviction, that the clan was more fundamental, and therefore presumably earlier, than the family. For Zuñi this fundamentality appears out of question: family life is too intense and its manifestations too ever present, clan functions too remote and vague, to make even a theory of clan priority tenable. As to other clan infested nations. I cannot, in the lack of personal experience with them, rid myself of the conviction that conditions among them must often, perhaps generally, be similar; and that the reason the clan has so frequently been accorded precedence, in the works descriptive of such peoples, is only that authors so preferred. The motive of the preference may have been fondness of the marvelous: a person who takes his cousin to be his brother, or in other words can have no brother as we know the term, but on the other hand has an unlimited number of mothers, is as much superior, for purposes of sensation, to the tamer individual who goes through life with two or three brothers and one commonplace mother, as a two-headed calf is to the ordinary one. There is something inherently fascinating as well as shocking in uncertain paternity, group marriage, and promiscuity, one or the other of which, if not all three, seem always to be at the back of the mind — or often just below the surface — of those who see clans and similar social groups as fundamental in primitive society. It is painful to renounce once and for always the emotional stirrings which these ideas, with their touch of the strange and forbidden, evoke. And finally, ever since the disastrous misapplication of Darwinism to human society, it has given untold and easily earned satisfaction to many to believe that a Zuñi or an Arunta is nearer to the chimpanzee in his thoughts and practices than he is to ourselves.

An older Zuñi woman of one's clan is a mother, an older man a kyakkya; to a woman of middle age, all her clan mates a generation younger are her children, to a man, his kyasse. But an exactly parallel condition holds for the father's clan: all the older men are fathers, the women kukku; and the men call their juniors, their clan brothers' offspring, children. What the

women call their clan brothers' children, is not so clear. According to rule, it should be talle and eyye. Perhaps it is; but I have not heard these two terms so used — which fact may reflect only my ignorance or be an outgrowth of the reluctance with which the words are employed for blood kin. I suspect that the women habitually accord with their brothers in calling their clan brothers' progeny simply children.

Individual 7, Crane clan of Badger father, spoke of Corn house number 40 on Map 1 as containing an old man "hom kyakkya k'oloktakwe," "my mother's brother Crane person." Houses 94 and 95 he referred to as temLa tonnacikwe, hom akukku, "all Badger people, my father's sisters"; and houses 387, 384, 378 as ha'i hom kukku, "three my father's sister."

In Table 7 are listed the appellations which the informant, number 1 therein, extends to most the adult members of his clan, Coyote. As he is about forty years old, the number of grandparent and grandchild designations is small, and the bulk of his clan mates are kyakkya and various kinds of mother — mother, little mother, and old mother — if senior; older and younger brother and sister when about co-eval; and kyasse if junior. It is notable that hacci and tsillu were not mentioned, being replaced by variations of tsitta.

The inconsistency of the Zuñi in the application of their kinship terms to their actual relatives has been several times commented upon. It is no wonder that clan mates are labelled even more randomly. A few examples from table 7 illustrate:—

1>26 kyasse, sister's child; >28, mother of 26, tsitta-ts'anna, little mother.

1>48 tsitta-Lacci, old mother; >29, son of 48, kyasse, sister's child; > the wife of 29 ikyinna, younger sister. This last woman is of course neither blood nor clan kin of the speaker.

1>46 kyakkya, mother's brother;>19, younger sister of 46, kyawwu, older sister;>47, younger sister of 46 and 19, kyasse, sister's child: that is, three actual brothers and sisters are addressed by terms referring to three successive generations of kindred.

PRINCIPLES.

DESCENT AND GENERATION.

Every Zuñi kinship term denoting a lineal relative is also used freely for collateral kindred. Terms purely of collateral denotation are confined to the uncle-nephew class, and besides the rather uncommon hacci and tsillu, which are partial synonyms of tsitta, they number only five: those for father's sister, mother's brother, and their reciprocals. Even these words,



however, are also applied to relatives that are collateral in a more remote degree.

It is unnecessary to reopen at length in this connection the question whether the narrower lineal or the wider collateral significations of the kinship terms are primary or more original. The answer given seems to depend in nearly every case upon a basic, usually unconscious, and often emotionally stained attitude of mind. As to the phenomena, there is in most cases fair agreement. Those who like to recognize in uncivilized nations mental operations intrinsically distinct from our own, and to feel their civilizations as of another order than ours, will interpret such facts as are here presented as evidence of the historical and psychological primacy of a larger group than the blood family. Those to whom the differences between cultures have significance only in relation to their common tendencies, and who view the abnormal only in the light of a departure from the normal, will distinguish in the kinship systems of the Zuñi the foundation of our own, applied and ramified in many interestingly peculiar ways. However far the author may be from converting to his opinion those who proceed from another premise because they are actuated by different impulses, he hopes that he has made clear in this work his underlying attitude and has adhered to it consistently.

From this point of view the Zuñi must be characterized as indifferent to the specification of the factor of dimension in kinship. They are heartless toward every consideration of whether relatives lie far on the side or come in the one biological line. Compared with us, they are utterly slovenly in this point.

They reveal precisely the same mental habit toward the important factor of succession of generations. Every kinship term known to them is applied freely to persons of distinct generations. If it is true that the father and the uncle, or the brother and the cousin, are called the same because they are or once were substantially one in the scheme of Zuñi life, we should have to conclude also that this scheme of life was or had been so organized that the grandfather was one with the greatgrandfather, the uncle with the brother, the nephew with the grandson, and so further without limit, not to speak of all blood kin being affinities by marriage and all affinities by marriage also blood kin. If it is legitimate to interpret fragments of kinship systems in accord with general principles, it is also legitimate to interpret the totality of such systems, which in actuality occur as units, according to the same suppositions. As soon as the Zuñi system is thus interpreted, both it and the supposition break down into a meaningless chaos.

The fact is, the Zuñi cares remarkably little for system or theory. He is an opportunist. He has the broad, vague outlines of his kinship system

well in mind; but he is not the least interested in following out basic principles into consistent detail. He knows perfectly well that nanna comprises his grandfathers and all his male relatives two or more generations older than himself; but this principle of nomenclature does not for a moment deter him from calling one of his nanna who is visibly younger than the majority, his father. In fact, consistent adherence to system can scarcely be expected in any point from a people who are perfectly content to call the same individual their father and their brother, or among whom both mother and son call the same woman mother. The Zuñi rule is one of thumb. The result is far from a finished job; but it suffices for the Zuñi, whose primary impulse is to have some designation of kinship for everyone possible, but who normally are far more interested in the person as such, and in his actual status toward themselves, than in the logical consistency or exactness of his designation.

It accords with this looseness of the Zuñi system, that all of their kinship terms in their narrowest or primary sense denote relatives not over two steps of relationship distant. Because of the biological foundation of kinship, it must have in fact, whether or not this is recognized in nomenclature, the vertical dimension of generations and the horizontal one of descent. If we count these two factors as equivalent, a father and a brother are each removed a step, a grandfather and an uncle each two steps, a greatgrandfather, a cousin, and a grandnephew each three equal steps. All considerations of sex and absolute age are independent of this framework and can be separately entered into it in a variety of manners and degrees.

By this scale, there is not even one three-step designation in the Zuñi system of nomenclature. One and two step terms are applied to kindred eight and nine degrees distant. Evidently, fine discriminations are not what the Zuñi is trying to express.



 $^{^1}$ Ante, 11>32, 52>7, 111's father>13's father; see also "Ceremonial Kinship Terms"; not to forget what has been said about inconsistency under "Kinship Terms among Clan Members."

² Ante, 3>19, 7>19.—A few incidents illustrate significantly. 5, the daughter of 3 and niece or kyasse of 34, died in 1916. Shortly afterward I met 34, and asked after his "kyawwu," meaning 3, who is his full older sister and in whose house he lives. He replied: "hom ikyinna? accekya," as much as to say: "You mean my younger sister? Don't you know that she has gone away (died)?" It proved that he habitually spoke of his older sister, 3, as his mother, of her daughter, 5, as his younger sister, and of his brother-in-law, 1, as his father. Only 27 remained as 34's older brother. All I can say is that 1 and 3 were in a sense the father and mother of the house. Not long after, when I presented an American visitor in this home, 1 made the introductions, which were on the basis of relationship, in exactly corresponding terminology. '7 once mentioned that a certain woman, who stands outside the genealogy recorded, was younger sister of a certain man. She had previously been described to me as his kyasse, or niece. Fearing confusion, I called attention to the discrepancy. Hinina, "the same thing," my informant replied, not evasively as if minimizing a palpable error, but with a touch of the impatience justified in a man hindered in his progress by a mere technicality.

AFFINITY.

In a measure, the same rough and ready but practical tendency may be seen in what is perhaps the most outstanding peculiarity of the Zuñi system: the complete lack, except for two generic terms, of all proper designations for relatives by marriage. The Zuñi proceeds in his nomenclature on the implied assumption that husband and wife are not only one flesh but one person — an assumption, by the way, which can no more be founded upon custom than upon physical fact, and which must therefore reflect merely a social attitude. To us, and to most nations, the father-in-law is two degrees removed. The Zuñi, in calling him father, treat him as a one-step relative. In view of the fact that the living customs of the Zuñi emphasize the unilaterality of their mode of reckoning descent, not to mention their having clans, this merging of affinities into blood kindred is remarkable. It results in calling by the same term persons who, like the mother and the mother-in-law, must by inviolable sentiment as well as unvarying practice be of different clan.

It is tempting to connect this method of nomenclature based on the assumed oneness of husband and wife, with the Zuñi type of marriage, which, however temporary and informal, is as essentially and necessarily a monogamous institution, in the feeling of the people, as among any Christian nation. In view of the obvious preëminence of the woman, who receives her husband into her and her mother's home, and who, with her sisters and female ancestors, owns the house, it is also worthy of note that she and her children recognize her husband's relatives as their kin as fully as he adopts hers. In this point, as in most others, the relationship terms of the Zuñi are so far from reflecting the alleged matriarchal habits of the Pueblo Indians, that they could be used just as well by ourselves or by a people with even more decidedly patrilineal customs.

SEX.

Sex enters into kinship denomination in three manifestations: the sex of the person in question; of the speaker or ego; and, in terms implying two or more steps, of the connecting relative or relatives. The expression of these three factors is quite unequal in Zuñi.

The sex of the individual referred to is specified in all ¹ Zuñi kinship terms except two: hanni and kyasse, both denoting juniors.

¹ Generic terms like talakyi, ulani, ottsi, are not included here or elsewhere in this discussion; neither are the non-vocative terms for husband and wife; nor terms confined to ceremonial usage. The terms referred to are the first eighteen of those listed and treated above.

The sex of the speaker is implied only in six terms: the three for younger brother or sister, and the three specific terms of the nephew and niece class. These of course all refer to juniors.

The sex of the intermediate relative is distinguished in all but one of the ten — or if inniha, stepmother be so reckoned, eleven — two-step terms in which alone this factor is capable of entering. The lone exception is nanna, grandfather or grandson. Hotta specifies connecting sex when it denotes the maternal grandmother, not always when it refers to the granddaughter.

AGE.

Absolute age has already been mentioned as one of the chief influences disturbing the regularity of the Zuñi scheme of kinship as it is applied to actual persons. Age however can enter into the theory of kinship system also as an avowed element, people of the same generation being distinguished as older or younger in sequence of birth. The Zuñi system admits this factor in all five of its denominations for brother and sister; but in no others, except the supernumerary hacci and tsillu which may be used instead of wider meaninged tsitta for mother's sister. The suffixes -Lacci and -ts'anna, "old" and "small," are however freely added to any and all terms, and often bring out seniority or juniority within the limits of one generation.

RECIPROCAL EXPRESSION.

Considerable attention has of late years been bestowed upon the manifestations of the reciprocating impulse in American systems of relationship. The tendency takes several forms, which it is well to distinguish.

What may be termed conceptual reciprocity is an exact accord in range of inverted meaning of the terms for two relationships. Complete conceptual reciprocity exists only when all persons called by one term call all those who thus name them, and no others, by the reciprocal term. It is immaterial whether the second term is identical with, similar to, or entirely different from the first.

Verbal reciprocity consists of the use of the same or a derivative term for the corresponding relative; it does not imply exact inverse meaning for the two terms, though this may occur.

Complete conceptual reciprocity without verbal similarity obtains between Papago sis, older brother or sister, and cühpi'rc, younger brother or sister. The conceptual reciprocity is just as thorough, and the verbal correlation approximate though not entire, in Zuñi, kyakkya, mother's

brother, and kyasse, man's sister's child. Both conceptual and verbal reciprocity are exact in Uintah Ute aitcin'i, which denotes both the father's younger brother, and a man's older brother's child. In Zuñi nanna, grandfather and grandson, the verbal reciprocity is complete, but the logical correlation partial; since the girl whom the grandfather calls hotta, also calls him nanna; and wowwo and hotta, the grandmothers, join the grandfather in calling the grandson nanna. The distinction may seem a fine spun one, since the whole matter is foreign to our usual thought. Thus English has only one term, cousin, which is reciprocal; and in this both verbal and logical reciprocity are complete. But in many Indian languages the reciprocal impulse becomes exceedingly important.

There is only one pair of conceptually reciprocal terms in Zuñi, the kyakkya and kyasse mentioned. There is an approach to such reciprocity in the fact that talle, woman's brother's son, and eyye, woman's brother's daughter, taken together, correspond inversely with kukku, father's sister. The generic terms talakyi and ulani are each self-reciprocal; but they are hardly terms of relationship in the strict sense. The words for husband and wife are also excluded from the reckoning, for obvious reasons.

Verbal reciprocity is equally limited. Beyond talakyi and ulani, it occurs, but without exact logical correspondence, only in nanna, hotta, and wowwo, all of the grandparent-grandchild class; and, incompletely, in kyakkya and kyasse.

The distinct failure of reciprocity to operate heavily in Zuñi is marked in the fact that persons designated as children name those who so call them by the five different terms tattcu, tsitta, hacci, tsillu, and inniha; by the term wowwo, which still further diminishes the incomplete verbal self-reciprocity of hotta; and by the circumstance that there is not a single instance of either kind of reciprocity in the favorable brother-sister class.

This weakness of the reciprocal impulse in Zuñi is apparently connected with a feature in which the system stands apart from many American Indian kinship schemes: the almost constant designation of the sex of the relative, and comparatively rare specification of the sex of the speaker. When there is exact conceptual reciprocity, one of the pair of corresponding terms, or one meaning of the single two-sided term, must normally express one of these two categories, the second the other category. Starting with a term like kyakkya, mother's brother, for instance, which denotes the sex of the person designated but leaves that of the user of the term indefinite—a term in accord with the principles dominating the English system—we are confronted with two alternatives. We can either adhere to the factors

¹ E. Sapir, American Anthropologist, N. s. xv, 135, 1913.

or categories involved in kyakkya, and employ one term used jointly by the mother's brother and sister for her son, and another used jointly by them for her daughter, in which case there is consistency of method but no reciprocity; or we can follow the frequent Indian plan of reversing the method and ignoring the sex of the relative referred to but specifying that of the speaker; in which event a satisfactory reciprocity is attained, but consistency is abandoned. It will require a comparative analysis of a considerable number of Indian systems to prove the actual causal relation between reciprocal impulse and variability of the categories involved; but since at least many native American systems evince extensive reciprocity and high fluidity of categories, whereas European systems have little reciprocity and much consistency, it is probable that the phenomena are connected historically as well as potentially. In fact, it is possible that the difference in consistency of employment of categories, which appears to give a truer description of the distinction between civilized and uncivilized systems of relationship than the customary concepts of "classificatory" and "nonclassificatory" or "descriptive," may be to a very important extent the result of the operation among Indians and other natives, and the absence among Europeans, of the impulse toward reciprocal and analogous expressions.

At any rate, the Zuñi, a matrilinear and clan people, approximate much more nearly to the English scheme, as regards reciprocity and consistency in the use of categories, than for instance the majority of the California Indians, who resemble us in being non-exogamous and reckoning descent bilaterally or paternally.

EUROPEAN INFLUENCE.

It may be queried whether this condition is not the result of Spanish influence upon Zuñi customs. This is a point on which historical knowledge must give the final determination; and this knowledge no one at present has. But I am confident that Spanish contact has not been an important influence on Zuñi kinship, and I incline to believe that it has not been an influence at all. The house life and house ownership, the economic status, the matrilinear reckoning, the clan organization and functions, the type of marriage and divorce, among the Zuñi, are all in direct conflict with both the theory and the practice of the corresponding Spanish, Mexican, English, and Catholic institutions, and yet maintain themselves unimpaired today. The universality with which terms denoting kindred of intimate consanguinity are applied also to remote collateral relatives; the endless

use of kinship terms for persons standing in non-consanguineal relations of ceremony, clan, temporary co-residence, or personal contact, and that irrespective of race; and finally the thorough confusion in which a school-bred Zuñi finds himself in trying to designate his relatives by English terms, which rest on the same foundation as the Spanish ones; all these considerations drawn from the use of the kinship terms themselves, leave only the slightest room, if any, for the supposition of an alteration of the purely native Zuñi system into something bastard through the influence of encroaching European civilization.

BASIC RECIPROCITY.

There is another, deeper, though vaguer kind of reciprocity recognizable than the conceptual, verbal, or combined forms already discussed. This may not be at all distinctively Zuñian; it may even be worldwide in substantially the same degree, and nothing but the undeveloped common root from which the specific types of reciprocity spring. But it inheres in the Zuñi use of their kinship scheme and should be mentioned. It is revealed in the fact that so far as generation, descent, and age are concerned, a Zuñi always applies to a given person only a term which corresponds in these points to the term which that person applies to him. If a Zuñi calls you grandson, you do not call him father; if you are his father, he is never your nephew; if a woman is one's younger sister, one is not her younger brother, nor her uncle. I say again, this may seem perfectly obvious. It is obvious in the light of our coherent, businesslike English system. But such consistency, elementary as it is, need not be present in so loose-jointed and slovenly a system as the Zuñi one is in its application. With a people whose mental susceptibilities are not jarred when a person calls a woman sister and her brother uncle, among whom a mother and her son are both "children" to the same individual, and with whom it happens that X is both "father" and "elder brother" to Y, it might theoretically be possible for A to call B his sister and for B to call him her mother's brother. But that is precisely where the Zuñi draw the line. And the fundamental feeling for reciprocity which they thereby evince, whether it be a universal or only a frequent one among the nations of the world, appears to be the basis of the more special and systematic phases of reciprocity which they have developed only moderately and other members of their race more intensely.

The only exceptions noted to the unanimous observance of this generalized reciprocity, are two, and it is possible that these rest on misunder-

standing of the cases. 15 calls 37 hotta, granddaughter; 37 calls 15 hacci, mother's oldest sister. 30 calls 1 pappa; older brother, probably on account of common clan membership; 1 calls 30 kyasse, sister's child: she is no blood kin of his, but his wife's father's younger sister. It may be added that 1 calls the husband of 5 talakyi, son-in-law, and is called tattcu by him; but this is only an apparent exception, as talakyi is essentially a generic term and tattcu a specific and vocative one.

ASYMMETRY.

Zuñi indifference to exactness and balance of system leads to a marked asymmetry in most of the groups of kinship designations. There are eight kinds of brothers and sisters possible. Few nations possess eight terms; but two or four are common, according to the factors stressed. The Zuñi have five. Everyone has four grandparents, and one, two, four, or eight terms would be logically consistent. The Zuñi have three. They have three of the nephew-niece type: a woman distinguishes her brother's children according to sex, a man calls his sister's son and daughter by the same word. There are four specific uncle-aunt designations in Zuñi three on the mother's side, one on the father's. There is a word for stepmother, none for stepfather. There are terms for father and mother, none for son or daughter. The granddaughter is addressed in one way by her father's mother, in another by her mother's mother and her grandfathers: the grandson is called the same by all four of his grandparents. These instances conveniently summarize the unsystematic quality of Zuñi kinship nomenclature which has been commented on in detail in the preceding pages.

KERESAN KINSHIP.

Morgan in his famous Systems gives a schedule of the Laguna terms of relationship. These were collected by Rev. Samual Gorman in 1860.¹ I secured brief lists from an Acoma man at the San Francisco Exposition of 1915, and from a Laguna woman at Zuñi. The conditions surrounding the latter informant were not such as to favor a satisfactory elucidation. Deficiencies in the Acoma list are due rather to my own lack of time. As the languages of the two pueblos are identical, or practically so, I present the data from all three sources in one list, so far as they reconcile.



¹ Smithsonian Contributions to Knowledge, xvII, 1871, see number 74 on pages 293 to 382.

ACOMA-LAGUNA SYSTEM.

naictiya father; father's brother; father-in-law; (man's) father's sister's son
naya mother; mother's sister; mother-in-law; (man's) father's sister's
daughter
amünty son; parallel nephew; son-in-law; parallel cousin's son
makü daughter; parallel niece; daughter-in-law; parallel cousin's daughter
tumüa (o?y?) brother of a man
(a)kwi (o?y?) sister of a man
(a)wa (o?) brother of a woman

(a)wa (o?) brother of a woman am (o?y?) sister of a woman ka'au (o?y?) sister of a woman

nawi mother's brother; also reciprocal, probably exact, i. e., man's sister's child

kuya father's sister; also reciprocal, probably exact, i. e., woman's brother's

nana grandfather; also reciprocal, perhaps grandson, perhaps man's grand-

child

papa grandmother: also reciprocal, perhaps granddaughter, perhaps woman's

grandchild

(s)atü husband (s)au'kwi wife

kuwa parent-in-law ("father" and "mother" also employed)

awa child-in-law (cf. woman's brother, above; "son" and "daughter" also

employed)

piye relative-in-law

The brother-sister terms are different in the three series which are here combined. The only wholly self consistent source is the Acoma informant, who discriminated according to the sex of the speaker, but denied any distinction between older and younger. As the former feature is not found in Spanish, it must be accepted as genuine Keresan, as it is also Zuñi. The expression of relative age, on the other hand, occurs among the Tewa of Hano and the Rio Grande, in the Isleta, Taos, and Jemez Tanoan dialects, and in Zuñi, besides being so general an institution in America that it can with difficulty be conceived as having been originally lacking. Unless my informant and I misunderstood each other, Spanish usage has therefore effaced native Keresan practice in this point.

The uncle and aunt and nephew and niece terms were given by the Acoma informant as applying to "identical" or "parallel" as well as to "cross" relatives; but he further insisted, and my Laguna authority corroborated, that the terms father, mother, son, and daughter were also employed for both the cross and parallel relationships of this class; in fact, the mother's brother's wife was a mother as much as was the mother's sister, and the mother's brother could be called father, and the father's

brother: uncle. This is not only non-European, but far more extreme than Zuñi. Morgan's table, dating from 1860, classes the father's brother with the father, and his wife with the mother, and reserves the distinctive word for uncle for the mother's brother. This is the Zuñi method; but on the other hand the Rio Grande Tewa denote all uncles by one term and all aunts by one — as we and the Spaniards do. As the remote Tewan Hano follow the Zuñi system (plus an obsolescent distinct term for father's brother), their Rio Grande relatives have very likely simplified their system from its original form to accord with the Castilian one. Whether the Acoma-Laguna of recent generations have done the same, or have hesitatingly wavered between this reduction and the tendency to lump all collateral relatives with lineal, or whether the evidence available is simply inaccurate, further investigation must determine. In any event, so far as the terms nawi and kuya go, they each have reciprocal significance, probably exact.

Specific husband and wife terms occur in both Laguna sources, but the Acoma informant gave "his (or her or their) father (or mother)" — exactly in accord with the Zuñi custom — and was heard to call his wife ka-naya, "her mother." I therefore suspect that the usual practice in both pueblos is identical with that of the Zuñi.

Another fundamental resemblance to Zuñi is the paucity of terms for relatives by marriage. Kuwa and awa, which occur in two sources, may be, if not entirely modern in meaning, reference terms for parent-in-law and child-in-law; and in address, and within the family, the Zuñi practice of using only father, mother, son, daughter, brother, or sister, may be followed. The term piye was given to me as meaning daughter-in-law, man's brother's wife, father-in-law, and occurs in Morgan as denoting a man's father's brother's son's wife, and a man's daughter-in-law. A generic term, perhaps of address, denoting any relative by marriage of the opposite or either sex, seems indicated — like Tewa ja'a, and something like Zuñi talakyi and ulani.

The children of two brothers, and presumably of two sisters, are brothers and sisters; but as between the children of a brother and of a sister, that is, cross cousins, the former are reckoned a generation younger and call the latter father and mother, and are called son and daughter by them. The Tewa of Hano ¹ follow the same practice, except that the father's sister's



[!] The Rio Grande Tewa call all male cousins mae mae, which in Hano means mother's brother, and all female cousins ko'o, or aunt. The latter term may be conjectured to have meant father's sister originally: compare Hano ki'u: father's sister. The modern Rio Grande Tewa terminology thus seems to be a case of making over the meanings of the words for one male and one female collateral relative to accord with the concepts of Spanish primo (hermano) and prima.

daughter is called father's sister, and not mother. The Hopi, according to a statement recently made before the American Ethnological Society by Dr. Lowie, have the Hano usage. Keres, Tewa, and Hopi thus agree in using for cross cousins terms that normally denote a difference of generation; the Zuñi stand apart among the Pueblos with their preference—though not an exclusive one—for brother-sister terminology for cross cousins.

Dr. Lowie has recently shown 1—on the basis of the distribution of the phenomena and without hypothetical speculation—that there exists a fairly regular connection, over most of North America, between definitely exogamous institutions and the terminological merging of lineal with collateral relatives. As only Tewa data were accessible to him at the time, he noted the Southwest as the principal area where the correlation, both positive and negative, did not hold. Since then, his determination of the Hopi nomenclature for cross cousins weakens the apparently exceptional status of the Southwest as regards this correlation; and the adhesion of the Keres to the Hopi-Hano principle in this point, strengthens his case still farther; to which may also be added the occasional Zuñi cases of the same type.

Close as the correlation is, it remains to be shown however that it is primary, and not a correlation between one phenomenon and a by-product of another. I should be inclined to connect the use of parent-child terminology for cross cousinship rather with unilaterality of descent than with clan exogamy, holding the latter to be perhaps a common but not necessary development, and an overlying development, of the former. The basic condition thus would be that in which a woman would be felt to be a very different thing from a man in relationship — less perhaps as an existing individual than as a factor in the relations of other people. Once this point of view prevailed, cross cousins would necessarily be felt to be something very different from parallel cousins, and cross uncles and aunts from parallel ones; and the distinction would find expression in nomenclature. On the other hand, the same point of view would tend to result in a greater differentiation of male and female lines of descent, with the probability of the greater weighting of one than of the other; and this differentiated weighting may in itself be the foundation of clan groups and exogamy. It is not a question, therefore, of the correctness of Dr. Lowie's correlation, but of its interpretation. I doubt, and believe it remains for him to prove, that his kinship nomenclature is fundamentally connected with exogamy. The terminology involved accords equally well with a certain mode of viewing

¹ American Anthropologist, xvii, 223-239, 1915.

kinship itself, and this mode may as well, for all we know, be at the bottom of exogamy as a side effect of the reckoning of descent. In other words, I refuse to bring in the exogamic clan as a factor at any point until it has been definitely established that the phenomena in question cannot be equally well correlated with and interpreted by the factor of the family of true blood kindred.

In spite of the fragmentary nature of the available Keresan lists, the generic resemblance of Keres to Zuñi and Hano kinship nomenclature is evident. The significant deviations, so far as they may not be mere inaccuracies or misunderstandings of information, seem mainly due to Spanish influence; which has been even more operative among the Rio Grande Tewa. The Pueblo type of kinship system, wherever we know it, has almost no specific terminology for relatives by marriage. It employs kinship terms abundantly for teknonymic purposes. Designations for near relatives, both lineal and collateral, are employed for all blood kindred, however remote, besides being freely applied to clan members, ceremonial associates, friends, and fellow residents. Exact reciprocal expression, both conceptual and verbal, is moderately developed, and the designation of the sex of the relative is more frequent, relatively to that of the sex of the ego, than among many American tribes. In general there is a characteristic asymmetry, loose-jointedness, and indifference to systematic consistency.

ETYMOLOGICAL.

Most if not all Zuñi kinship terms are from monosyllabic stems. The same seems to be true in Tewa and perhaps in Keres. Several Zuñi and Tewa stems of the same meaning prove to be identical or similar in sound.

Zufii	Hano Tewa
ta-, father	ta-, father
tsi-, mother	yi-, mother ("ji-," $j = y$)
pa-, older brother	pi-, older brother
kya-, older sister	ka-, older sister
ku-, father's sister	ki-, father's sister

There seems to be no necessity to interpret these resemblances as remnants of an ancient unity of the languages. Several other stems possess similar meanings in all three of the stocks: their significance varies, but they regularly refer to older persons. These cases appear to be due to one language being influenced by others.



88 Anthropological Papers American Museum of Natural History. [Vol. XVIII,

	$Zu ilde{n}i$	Keresan	Rio Grande Tewa	Hano Tewa
na-na	grandfather (grandson)	grandfather (and reciprocal)		
pa-pa	older brother.	grandmother (and reciprocal)	greatgrandfather	greatgrandparent
ku-ku -ya	father's sister	father's sister (and reciprocal)		father's mother (and reciprocal)
ta-tcu -ra -da	father	- · · ·	father	father
ka-ka -ye -'au -wwu	older sister	woman's (older?) sister		older sister, mother's older sister

II. THE HOUSE AND MARRIAGE.

I have no information to add to Mrs. Stevenson's truthful description and at some points very full account of the Zuñi customs concerned with the house, marriage, and motherhood, and shall confine myself to emphasizing a few features that seem to be of broader significance.

First, and again, it is in the woman's ownership of the house that the so-called matriarchate of the Zuñi centers and rests. Without this ownership there would be no matriarchate left; even the matrilineal reckoning of descent would reduce to a nominal matter.

The woman's title to the house is absolute. When a building is pulled down, it is the men who do all the heavy work. When it is re-erected, or an entirely new house built outside the old town, the men quarry and lay the stone, cut and lay the roof logs, and carpenter the doors and windows; the woman's part is auxiliary throughout, except for the light labor of plastering, in which she holds sway. Yet when a man has built such a house, and he and his wife quarrel and separate, even though for no other reason than her flagrant infidelity, he walks out and leaves the edifice to her and his successor without the least thought of being deprived of anything that is his. Men have shown me the houses they have put up for a wife who subsequently installed another man as her husband, and have pointed out the glass windows, which they had purchased from the storekeeper with their own earnings, still in place; but the information was given casually, and without implication of injustice being involved. The wife was blamed for her laxity of morals and for the deceit of unfaithfulness before the rupture was consummated, not for her retention of property to which in our eyes the husband would have a claim. The Zuñi does not even have an inkling of having been chivalrous in such an abandonment. His conduct is as much a matter of course as resigning oneself to anything inevitable, like a cloudburst washing out one's cornfield. It would be interesting to know the civilizational circumstances under which such customs sprang up. Even if the woman formerly built the house, it would remain to be understood how this habit originated, and how the people came to remain conservative in the matter of ownership while the labor of construction shifted to the other sex.1

¹ That this shift has taken place at Zuñi is highly probable, since at Hopi, at least until recently, the women were the builders. Evidently Zuñi society has remained aboriginal, while the material and economic phases of their life have slowly altered towards conformity with European practices.



A third point is that however "matriarchal" this female ownership of the house may constitute the Zuñi; they are not a woman ruled people. The position of woman is not materially different from that which she occupies in nations of non-matriarchal institutions. As regards government, women claim and have no voice whatever. As regards religion, there are no women priests nor fraternity officers—only associates—; and while women are not excluded from religious activity, their participation is obviously subsidiary. Even within the house, as long as a man is a legitimate inmate thereof, he is master of it and its affairs. There are Zuñi women that control their husbands, sons, or fathers; but they do so only by virtue of inherent force of character; and to the same degree, and with the same frequency relative to the total population, as among other nations.

Finally, the Zuñi are a monogamic people. Divorce, if it may be called such, for it is nothing more than a separation, is as easy as marriage; more facile, in fact, for a young girl still under parental influence. There is much in Zuñi life that our standard code would denounce as loose. Most men and most women of middle age have been married to several partners. Even people of mature age change. The majority of the Zuñi have half-brothers and half-sisters scattered through the town. But however shifting marriages may be, marriage is an affair of one man to one woman. The normal Zuñi no more dreams of practising polygamy, polygyny or polyandry, than does the average American citizen.

¹ It is of interest in this connection that according to Mrs. Elsie Clews Parsons the Zufii affirm that they do not practise the levirate and seem to resent the imputation of the custom. I should have had a conviction that the institution would be repugnant to their feelings.

III. THE CLAN.

PRINCIPAL FEATURES.

The Zuñi clans today number fifteen. The largest clan comprises four hundred or more persons; of the smallest, there remain only three or four people, so that it hovers on the edge of extinction. Marriage in the mother's clan is forbidden; in the father's clan, disapproved but tolerated. Neither phratries nor moieties have any social significance; all such groupings of clans appear to be wholly esoteric and symbolic. Equally devoid of social effect, frequently even of recognition, are certain smaller units into which some large clans are subdivided. The names of these subdivisions however serve to connect the Zuñi clan system with that of the other Pueblos. There is some localization of clans within the town; but it is fragmentary and irregular. There appears to be no central clan house, no recognized head, no meeting or council, nor in fact any organization whatsoever; nor does the clan as such ever act as a body. 1 Neither are the clans associated with the kiwwitsiwe or kivas. They have little connection with the religious societies or fraternities either in name, function, or membership, except in certain special and limited cases. The clans do enter at innumerable points into Zuñi ceremonial; but it is through the requirement that such and such an act of religion must be performed by a person or persons of such and such a clan or father's clan, and not by any participation of the clan as such. There are no totemic taboos, and no worship of the clan totem. Finally, people are reckoned as belonging to the father's clan almost as much as to the mother's.

MARRIAGE REGULATIONS.

The aversion to marriage into the father's clan is not nearly so strict as into the mother's. There are two cases in the genealogy obtained. Number 3, an old Crane woman, with a Badger father, married a Badger

¹ Mrs. Stevenson (Bur. Am. Ethn., Ann. Rep. xi, 112, 1894) speaking of an impoverished family at Sia, says, "Nothing is done for this family by the clan. Close observation leads the writer to believe that the same ties of clanship do not exist with the Sia as with the other tribes... The wife belongs to the Corn clan and has a number of connections. When the writer chided a woman of this clan for not assisting the sufferers she replied: 'I would help them if I could, but we have not enough for ourselves,' a confirmation of the opinion that the clan is here secondary to the nearer ties of consanguinity. The care of one's immediate family is obligatory; it is not so with the clan." It is a fair question whether the conditions here described as peculiar to Sia are in truth exceptional and modern, or normal and of old standing.



man, who was not however a kinsman. Number 105, a Sun man, with a Crane father, once married a Pikchikwe woman whose father was also Crane. This caused talk rather than disapprobation. Like so many Zuñi marriage ventures, this matrimony did not last. The man's more distant relatives were heard joking him about it.

In learning the clan affiliations of houses, and recording clan censuses,

I encountered several marriages into the father's clan, both by men and
women. Normally the breach was not formally enunciated, but became
apparent as information accumulated. It is clear that this violation is not
a mere symptom of modern decay of native institutions: conservative old
men, and the mothers of women now middle aged, have committed the
irregularity. The practice seems to have been in much the same status as
the bride's going into her husband's house: both are contrary to formulated
custom, and liable to meet ridicule and light reproach, but are and have
been in usage in an appreciable percentage of cases. The objection to
marriage into one's father's clan is based on the ground that one is marrying
yam tca'le, "one's own child"; a woman who has married a member of her
father's clan, must on certain ceremonial occasions, such as washing the
head, behave to her husband as if he were "her child." 1

The Tobacco clan appears to have a particular inclination to marry and remarry with Pikchikwe. Number 1, the informant who gave the census reproduced in table 8, had a Pikchikwe father and has a Pikchikwe wife — who by the way lives in what was originally the house of his people. For the women who have come out of house 72 of map 1, the case is even more extreme — unless my information is badly confused — as the following genealogy shows:

$$P\sigma + Tb \circ 11 + P\sigma$$

$$Tb \circ + P\sigma (Pekkwinne)$$

$$P\sigma + Tb \circ 12 \qquad Tb \circ 14 + P\sigma$$

I have encountered one case of two people of the same clan marrying. This union took place between the summer of 1915 and that of 1916. Aisintiwa,— a Pikchikwe man out of house x156, but reared since boyhood by the Bear woman and her Zuñi-adopted captive Mexican husband Jesus of house 534 f,— separated from his Sun wife and married a Pikchikwe woman in house 454. This fact came out incidentally to tracing the clan connections of the members of the Ne'wekwe fraternity.² My first informant,

See table 11.



I should have expected the opposite terminology: in this case, the husband is the wife's clan father, and she the child of his clan and therefore by extension his child.

the director of the Ne'wekwe, mentioned the fact without comment; the governor of Zuñi confirmed it, and the only explanation he or his wife could give was that Aisihtiwa and his new wife had overlooked their being clan mates. Their elders, however, would scarcely have forgotten the circumstance in a normal case; and I am inclined to find considerable abnormality in Aisihtiwa's being brought up away from his natal home or the homes of any of his close kin, in a house the head of which, on account of his alien origin, is not a member of any Zuñi clan. Further, Aisihtiwa is of the Lapikteikwe subdivision of the clan, and his wife of the Mullakwe. This fact may have been a palliation in the native mind. In any event the occurrence is isolated, so far as my knowledge goes.

LIST OF CLANS.

The Zuñi clans have been recorded by several investigators, whose closely according data are collated in the appended table.

It will be seen that my list tallies almost exactly with that of Mrs. Stevenson. All my informants mentioned all sixteen of her clans, and none added any others. It is of interest that none of the informants knew the total number, which must therefore be devoid of significance to the native mind. My principal informant, the governor's father, knew nothing of the extinct clans cited by Mrs. Stevenson, except that he recognized the Kwinikwakwe or Black Corn as a subdivision, and an existing one, of the Corn The one material difference between the data of Cushing and Hodge and those of Mrs. Stevenson and myself is that the former give the Antelope clan as already extinct, but list the Rattlesnake clan as still surviving. The Antelope clan (or really, subdivison of the Deer clan) survives today in the persons of one or two males. As to the Rattlesnake clan, there is some doubt. It seems unlikely that it could have escaped the entire notice of so long a resident and indefatigable a worker as Mrs. Stevenson. She came to Zuñi almost as early as Cushing, and lived there later, so that even if this group had died out soon after the beginning of Cushing's domicile and before the publication of his work, some knowledge of it, at least as a recently extinct body, must have reached her. Further, Cushing 1 gives Chitolakwe not only as the name of a clan but of a fraternity; Mrs. Stevenson, while ignoring the Rattlesnake clan, refers to the Chikialikwe or Rattlesnake society.2 My informants all positively denied that there ever was a Rattle-

¹ Bur. Am. Ethn., Ann. Rep., x111, 371, 1896.

² Ibid., xxIII, 528, 1902.

snake clan or a Rattlesnake society among the Zuñi; and one of them told a myth that accounts for the absence of these bodies among his own people and their presence among the Hopi.

When the Zuñi still lived at Hallonawa, a family went out to get wood, leaving a little boy and girl in the house. The boy kept looking out, but no one returned; and at last he followed his parents. A rattlesnake heard the little girl crying, came, entered, and looked at her. Still no one returned, and he took her with him. When she had lived with him for a time, he said: "Perhaps the people will find and kill us; let us go away." So he took her to A'tahnakwe, a hill to the southwest. But the rattlesnakes who lived there said to the two: "The people might find you here and do us an injury." Then the snake and the girl went to Iccannantekkyapo'a, the semi-circular hillock half a mile south of Zuñi; but the snakes there also would not let them stay, for fear of punishment by human beings. They went on to Tci'pa'na hill, where the snake residents allowed them to remain, and here they lived until the girl was grown up. Then the snakes took her back to Hallonawa, where the visitors were about to establish a fraternity like that of the Hopi. But the Zuñi at Hallonawa killed the woman and some of her associates; and the others said: "Let us go to a country where they are good to us." So her offspring and their rattlesnake kin went to the Hopi, and the Hopi make the snake dance. But the Zuñi have no rattlesnake clan.

From what is said below of synonyms and subdivisions among Pueblo clans, I should infer that the alleged Zuñi "Sky" clan was an equivalent of Corn or possibly Sun, "Water" certainly of Corn or Frog, "Wood" of Coyote, and "Rabbit" of Tobacco.

MOIETIES AND PHRATRIES.

As regards moieties or a dual grouping, I obtained absolutely no information. All that is on record regarding Zuñi moieties seems to be contained in the versions by Cushing and Mrs. Stevenson of an episode in the Zuñi tribal myth.

The Cushing account ¹ tells how soon after the emergence from the under world Yanauluha carried a staff among the plumes of which appeared four round things, seeds or eggs, two blue like the sky or turquoise, two dun-red like earth. Yanauluha told the people to choose. From one pair would issue beings of beautiful plumage, and where they flew would be everlasting summer; from the other would come evil beings, "uncolored, black, piebald with white," and where these flew, and the people should follow, winter would strive with summer, and food be obtainable only by labor. The people chose the blue eggs, and the strongest seized them. Worms issued from this pair of eggs, which grew into ravens. But the other eggs held by

¹ Bur. Am. Ethn., Ann. Rep. x111, 384, 1896.

Kroebe

Cushing 21

Pikchikwe, Dogw Kyakkyalikwe, F Tonnashikwe, Ba Yattokvakwe, Su Tonnakwe, Turk Towwakwe, Corr K'oloktakwe, Sai M: Pichikwe or Mulakwe, Parrot or Macaw U: K'yak'yalikwe, Eagle

S: Tonashikwe, Badger M: Yatok'yakwe, Sun E: Tonakwe, Turkey M: Taakwe, Seed or Corn

N: Kåloktakwe, Heron or Crane

Takkyakwe, Fro Suskikwe, Coyot Ayyahokwe, Tan-herb

D: Tak'yakwe, Toad W: Suskikwe, Coyote

Annakwe, Tobac Anshekwe, Bear

S: Aiyahokwe, Redtop-shrub U: Anakwe, Tobacco N: Aingshikwe, Bear

Poyyikwe, Chapt

E: Shohoitakwe, Deer W: Poyikwe, Chaparral cock or Grouse

N: Tathluptsikwe, Yellow-wood

Tattluptsikwe, Ergreen-oak 20 (Ma'wikwe, Anti

Shohwitakwe, De

D: Tchitolakwe, Rattlesnake 22

1 Figures refethe Mindeleff plot of Zuñi, which they dated as belonging to the there, each gave me one "house" - that is, family comprising Zufii in 1916.

² My Zuñi in sub-clan of that period.

tree. It does not could not determine the species, and give the translation of Cush-Mrs. Stevenson, in This is not really a clan, but a subdivision of the Deer clan, as is same series, xxx, or and Antelope may not intermarry; yet in enumerating clans, does not mean Peed both, as if they were separate. We should say "one clan with people are a divishi characteristically put it toppinte ci'inna, "one name." The translation: dogw"lokkya," brownish, and large; the ma'wi, as yellowish, of the

Towwa or antier that is single-spiked except for a short prong half way up consonant with Zu

4 I use the eqn. Rep., xxiii, 292, 1904.

merely generic fol, of her work, Mrs. Stevenson expresses the conviction that the

Takkya, as not frog.

clan will hereafter Torr."

• Also heard the only member of this clan for the past ten or twelve years."

Annshikwe. The tinct in 1902 by the death of an aged shiwanni." My informants ⁷ Tansy-must_{twe} or Black Corn people as one of the existing subdivisions of the Rep., xxx, (86), lentity as a clan now or formerly.

past seed in July, st, old series, 1x, 345, 1896.

The Zufii in. Rep., xIII, 368, 1896. The clans marked N. W. S. E. U. D. M. from ourselves. b the North, West, South, East, Upper or Zenith, Lower or Nadir, exact determinated

or by a student wl

word for deer, propook of American Indians, Bur. Am. Ethn., Bull. 30, Volume 11, based on Cushing Cushing the Zufii have 7 phratral groups, divided into 16 surviv-

Poyyi is the D, M have the same significance as in the preceding list.

have impressed throurn. Am. Folk-Lore, 111, 116, 1890, gives the Zuñi gentes as four-Berberis Fr Bear, Coyote, Macaw, Corn, Tortolse, Chaparral Cock, Tobacco, Zufi, the Americalwer, Badger. Tortoise (or Turtle) is evidently a slip for Turkey, the shrub palo amth Pikchikwe, Water probably with Frog. and Sun Flower with polish. Deer (and Antelope) which are not mentioned, we have the same

" The Yellowrs. Stevenson and myself.

of Antelope, there

Yanauluha and by the fewer and weaker but wiser people who waited with him, grew into macaws, who flew to the summer land of the south. "As father, yet child of the macaw," Yanauluha "chose as the symbol and name of himself and as father of these his more deliberate children — those who had waited — the macaw and the kindred of the macaw, the Múla-kwe; whilst those who had chosen the ravens became the Raven-people, or the Kâ'kâ-kwe. Thus first was our nation divided into the People of Winter and the People of Summer." Yanauluha became "speaker to and of the Sun-father," "Pékwi Shiwani Ehkona (and Earliest Priest of the Sun)," that is, the first Pekwin, as Mrs. Stevenson would say. "He and his sisters became also the seed of all priests who pertain to the Midmost clan-line of the priest fathers of the people themselves 'masters of the house of houses,'" in other words, of the highest Zuñi priest, the Kiakwemosi of Mrs. Stevenson, who, together with the Pekwin, must according to her be of the Pikchikwe or Dogwood clan.¹

The Cushing account goes on to tell how "the Twain Beloved and priest fathers gathered in council for the naming and selection of the man-groups and creature-kinds (tanawe), spaces, and things. Thus determined they that the creatures and things of summer and the southern space pertained to the Southern People, or Children of the Producing Earthmother, and those of winter and northern space, to the Winter people, or Children of the Forcing or Quickening Sky-father. Of the Children of Summer, some loved and understood most the sun, hence became the fathers of the Sun people (Yätok'yakwe). Some loved more the water, and became the Toad people (Tak'ya-kwe), Turtle people (Etâa-kwe), or Frog people (Tak'-yaiuna-kwe), who so much love the water. Others again loved the seeds of earth and became the People of Seed (Tâatem'hlanah-kwe), such as those of the First-growing grass (Petâa-kwe, now Aiyaho-kwe) and of the Tobacco (Ana-kwe). Yet still others loved the warmth and became the Fire or Badger people (Tonashi-kwe). According, then, to their natures and inclinations or their gifts from below or of the Masters of Life, they chose or were chosen for their totems."

"Thus too it was with the People of Winter or the North. They chose, or were chosen and named, according to their resemblances or aptitudes; some as the Bear people (Ainshi-kwe), Coyote people (Suski-kwe), or Deer people (Shohoita-kwe); others as the Crane people (Kâlokta-kwe), Turkey people (Tonakwe) or Grouse people (Poyi-kwe)."

Mrs. Stevenson's account of the corresponding episode runs as follows:—

It was at Häntlipinkia that the Ashiwi received their clan names, which originated in this way: During their migrations the Ashiwi traveled in groups, so when



The Kiakwemosi may be of another clan if his father is Pikchikwe. Op. cit., 163-168.
 Mrs. Stevenson's "Divine Ones," Köwwituma and Watsusi (p. 24), not to be con-

fused with the Ahayuta or twin war gods, Uyuyewi and Matsailema (p. 35), although the two pairs of personages are undoubtedly a mythological duplication of a single concept. It is interesting that a young Zuñi who voluntarily recounted to me an outline of part of the creation or tribal myth, named the war gods in place of the "Divine Ones." It need hardly be added that he was not a priest.

³ This word seems to be from towwa, toa, corn, and temma, all, and to mean something like "all kinds of corn." This would make the meaning that the Corn, Tansy-mustard, and Tobacco clans were connected.

⁴ Producing fire with the drill, which seems to be always a more or less ritualistic action among the Zufii, is the function of people of the Badger clan.

[•] P. 40.

the Divine Ones decided that the people should be gathered into clans they addressed each group, saying: 'You will take unto yourself a name?' Of one group he [sic] inquired 'What will you choose?' and they answered: 'We are the Pichikwe (Dogwood people).' Another group having been questioned, they replied: We are the Towakwe (Corn people).' Others chose to be the 'Ko'loktakwe (Sandhill Crane people), selecting this bird because it happened at the time to be flying by. Each name was chosen from some object seen at the time, and the totem of each clan was cut on the rocky walls; many of them are to be seen at the present time.

The Pichikwe clan was divided in the following manner: Yanowwuluha, pekwin to the Sun Father, placed two eggs in a sacred basket of meal and deposited it on the floor before the ettowe of the Ashiwanni and requested all the people of the clan to choose an egg. All chose the beautiful blue egg; none would have the more homely one. But, alas! When the eggs were hatched the raven came from the blue egg and the macaw from the other. Yanowwuluha then said to some of the Pichikwe, 'Henceforth you will be the Mula (macaw) Pichikwe.' Others of this clan he called Kaka (raven) Pichikwe. Yanowwuluha sent the Mula to Mexico and with it a number of the Mula Pichikwe to look for the Middle place.

Raven and Macaw were frequently referred to by my informants as subdivisions of the Pikchikwe clan, while they denied any moieties among their people as a whole. As a reflection of the existing social status, Mrs. Stevenson's version of the creation myth is therefore unquestionably the more correct, and Cushing's is quite misleading. On the other hand, the Zuñi tradition is throughout concerned with the people as a whole, and, in contrast to Hopi legends, scarcely at all with the fortunes of individual clans. Cushing's version is thus much more in consonance with the spirit of the myth, as well as having more point both artistically and symbolically. It is therefore not unlikely that it too rests substantially upon native tradition, which may be oscillating and inconsistent upon this point.

It may be added that Mrs. Stevenson makes no reference to moieties in her description of the ceremonial practices and esoteric beliefs of the Zuñi, among whom this institution must accordingly be regarded as lacking, or substantially so, as compared with the strong emphasis placed upon it in modern native life among the Rio Grande Pueblos.

I also learned nothing of phratries, or clan groupings, which are so prominent at Hopi, and of which Cushing gives the two lists that have been indicated in the foregoing table of clans. As with the moiety, I am convinced that phratries play no part in the social life of the people, so far as marriage, descent, and personal relations are concerned; but that in certain aspects of religion, symbolic groupings of clans are made along the lines indicated by Cushing, though these may possibly be so wholly mental as

¹ I have heard an allusion to a separation of the Pikchikwe — not of the nation — which undoubtedly refers to the same myth incident.

scarcely to affect even ritual. The interpretation of the Cushing evidence is considered below in the discussion of the localization of clans in the town.

KERESAN MOIETIES AND MARRIAGE.

I have gone over Frederick Starr's valuable census of Cochiti ¹ to ascertain whether there is any evidence of an exogamic moiety or phratral system on the Rio Grande. His list contains reference to 63 marriages, 4 of them within the clan and in violation, of course, of the old law. The other 59 involve marriages between 32 different pairings of clans. There are 11 clans, and therefore only 55 such couplings possible. As the clans are small, from 51 to 4 souls in number, probability would demand a considerable but scattered proportion of possible pairings that were unrepresented by actual marriages. This is precisely the condition found. Consequently the distribution of marriages is just such as might be expected from the figures involved, on the assumption that there were no restrictions on intermarriage between any of the clans.

COCHITI MARRIAGES.

·	Cottonwood	Mexican Sage	Ivy	Scrub-oak	Turquoise	Sage	Water	Calabash	Coyote	Maire	Sun	Total
Cottonwood Mexican Sage Ivy Scrub-oak Turquoise Sage Water Calabash Coyote Maize Sun	x	8 x	2 x	5 1 2 x	2 1 2 - x	1 2 2 x	2 - 2 1 - x	1 2 - 1 1 4 1 x	1 2 2 2 1 — x	- 2 - -	1 1 - - 1 - 1	22 18 8 13 11 11 8 10 9 4 4

The only clans of any size that show no intermarriage are Cottonwood (22) and Sage (11); Mexican Sage (18) and Ivy (8); Scrub-oak (13), and



¹ Proc. Davenport Acad. Sc., vii, 33-45, 1899.

Turquoise (11); and Sage (11) and Turquoise (11). Sage thus is not intermarried with Cottonwood or Turquoise; but these two are intermarried, decreasing the probability that Sage forms an exogamous unit with either. And similarly for other cases.

It may be concluded, therefore, that whatever the political or ceremonial importance of the moiety among the Keresan pueblos, it does not exist as a basic social division concerned with marriage and descent. Nor is there indication of any exogamic phratral groups. Descent remains maternal, but Spanish family names are inherited in the male line.

ZUÑI PHRATRIES AND MARRIAGE.

I have made a similar compilation for Zuñi, based on most of the entries in Table 3, plus a number of records of the paternal clan of individuals — which of course signifies a marriage in a former generation. The series is larger than for Cochiti: the result is identical.

ZUNI MARRIAGES.

·	Pikchikwe	Eagle	Badger	Sun	Turkey	Corn	Crane	Frog	Coyote	Tansy Mustard	Tobacco	Bear	Deer	Chaparral Cock	Yellow Wood	
Pikchikwe	→	9	14	10	4	12	5	4	3	1	5	2	2		_	71
Eagle		I	7	1	4	1	2	1	3		1	1	2	1	<u> </u>	33
Badger			I	4	4	1	2	1	1	1	-	5	1	2		43
Sun	1			I	-	i —	8	1	1	1	—	-	1	1	1	29
Turkey	i			:	_→	3	_	-		-		_	1	<u> </u>	, —	16
Corn	I			!		i ¹→,	1	_	. 1	-	-	_		_		19
Crane	'					ı	' ¹ →	· 	. 2	-	_		_	!	_	20
Frog				I		1		ا	· —		_	· —	i —	_	1	, 8
Coyote	1	ı							l_→	_	_	1	' —			12
Tansy Mustard	i	1	İ	ı			ı			[→	-	_	' —	_		3
Tobacco	!	1	1	l l		1					'→	_	_	. —		6
Bear	1	1				1	i					¹ →	1	_	_	9
Deer	1	1					ı I						١	1	! —	7
Chaparral Cock						i								'→	-	2
Yellow Wood	1			!		i				1			1	ı	١	Z
	1	•		1										1		282
		i		1		1				i			1	1		202

The clans are arranged in the order of their strength, as per the number of houses assigned to each. The disproportionate number of marriages into which Badger and Crane people entered, is probably due to the circumstance that the half dozen informants used included two Badger and two Crane men.

The general uniformity of distribution of marriage partners is evident. Two small clans are not likely to produce cases of intermarriage until a long series of instances is available.

In the subsequent section on the Pueblo Clan System, evidence is adduced to show that certain Zuñi clans belong to what seem to be units. when comparisons between all pueblos are instituted. Such Pueblo units or phratral groups, or perhaps single clans with double names, are Corn and Frog; Badger and Bear; Tansy Mustard and Chaparral Cock; and perhaps Eagle, Sun, and Turkey. Of these, Zuñi Corn and Frog show no intermarriage in the foregoing table; but this is an accident of the figures, since a Frog woman in house 181 (see map 1) was instanced to me as having had a Corn husband. As for Badger and Bear, so far from there being any prohibition, there seems to be a particular tendency for Bear to wed Badger five cases out of nine recorded. As to Tansy Mustard and Chaparral Cock, some thirty marriages would have to be known for the latter, and more than a hundred for the former, instead of a paltry three or four, before probability would be likely to produce an instance of their intermarriage. For Eagle, Sun, and Turkey, the list contains instances of the former marrying each of the latter; as between Sun and Turkey, there is no case in the table, but this is mere accident; since Lupi, a Sun man out of house 446, married a Turkey girl in 452.

It may accordingly be concluded that, however consistently the clan system of the Pueblos in general may go back to a simplified scheme, the Zuñi have no consciousness of any such scheme, except perhaps in identifying their clans with differently named ones of other tribes. Their fifteen clans are to them perfectly independent and equivalent units, each as thoroughly distinct from one as from all the other thirteen. Indirect evidence therefore confirms the outright statements of the Zuñi: they possess no phratries as social units. The probable symbolic grouping of clans in certain mystic ritualistic connections is wholly secondary and superficial to the Zuñi social fabric.



SUB-CLANS.

Most of the larger Zuñi clans are recognized by the older people as comprising subdivisions. Sub-clans of the same clan cannot intermarry. They do not enter into daily life. The younger people are barely aware of their existence, except for the Pikchikwe, and do not know their own sub-clans. The answer to the question: "Kwap to annotayye, what is your clan?" is invariably the name of the clan, not of its subdivision; thus: "Pikchikwe," not "Mullakwe." The sub-clans, — barring the Raven and Macaw divisions of Pikchikwe — are moreover not mentioned in either mythological or ritual connection by Cushing or Mrs. Stevenson; so that their function, and their place in the life of the nation, remain obscure. Their significance to the student lies in certain connections which they help to establish between the clans of the Zuñi and of the other Pueblo groups.

The following are the sub-clans as recited by the governor's father, and in part substantiated independently by other informants.

Pikchikwe:

- La-piktcikwe,¹ "brush" or "wood" Pikchikwe, i. e., the division named after the plant itself. Also called La-tanne.
- Mullakwe, macaw.
- Kokkokwe, raven or crow or god.
- Kwallacikwe, rayen or crow. The informant and another insisted that kokko and kwallaci were two names for the identical bird.

The equivalent of Zuñi Pikchikwe among other Pueblos clearly is the Kachina clan. Now Kokko, which means "god" as well as "raven," is the Zuñi equivalent of the Rio Grande and Hopi Kachina. It is therefore probable that Kokkokwe in the present connection means "god-people" rather than "raven-people," and that Kokkokwe, as a sub-clan name, is merely a synonym of Kwallacikwe, which refers jointly to raven and crow, these two birds not being distinguished in native terminology. I have heard mention of a part of the Pikchikwe who formerly went north and became "Kokko" — and gods rather than birds seemed to be meant. Perhaps the accident of identical though discrete words for raven and god led to folk etymologizing; or on the other hand, a myth which told of the raven-crows of the north turning into gods (or vice versa), may have led to one and the same Pikchikwe sub-division being called both Kwallacikwe and Kokkokwe.

The governor organized the Pikchikwe clan differently from his father. He first set off the La-piktcikwe from all the remainder of the clan. This remainder he designated as Kokkokwe, with the Mullakwe merely patcippa, "sticking on" to them. Kwallacikwe he disposed of as a synonym of Kokkokwe. When there are two Koyyemshi impersonators from Pikchikwe, which happens twice in four years, one is La-piktcikwe, one Mullakwe-Kokkokwe.

¹ The ending -kwe throughout signifies "people."

There is thus a fourfold division recognized in this clan, and two twofold ones. One of the latter enters into myth. But the two recorded versions of the myth, already referred to, differ: one divides the clan and the other the nation; neither coincides with the division of the clan as admitted in actual practice. This is characteristic Zufii loose-endedness: everything is systematically organized, but no system ever comes out exactly. I suspect that the primary division is a binary one, as in the Badger clan, and that the supernumerary synonyms are the result of conflicting tradition. This interpretation accords with the evidences of polarity in the general Pueblo clan system, as discussed below. But the number of sub-groups actually existing is three: Dogwood, Macaw, and Raven-Crow-God.

I learned of few individuals who were La-piktcikwe. Pikchikwe people who were interrogated usually claimed to be either Mullakwe or Kokkokwe-Kwallacikwe, more frequently the former. Even this appurtenance is generally known only to their relatives. The governor's father several times mentioned Pikchikwe individuals, but in scarcely any case was able to specify the sub-clan.

Kyakkalikwe, Eagle.

- 1. Pockwakwe, a black eagle.
- Kyakkyalikwe, named for kyakkyali-k'ohanna, "eagle white," probably the bald eagle, as it was said to have a white tail.

Tonnashikwe, Badger.

- 1. Tonnacikwe, badger proper.
- Mu-tonnacikwe, Mukwe-badger, that is, Moki or Hopi badger. These people long ago lived with the Hopi.
- 3. Pettsikowakwe, bent over straw.
- 4. Huhtetcikwe, a plant something like a sunflower.

The interpreter happening to be of Badger clan, I asked him to which of the four divisions he belonged. He did not know, and learned with evident interest from the old man, a clan mate, though not a blood relative, that they both were Mutonnacikwe.

Subsequently the informant stated that there are only two kinds of Tonnacikwe, the Tonnaci-k'ohanna or white badger, the Tonnacikwe proper; and the Mu-tonnacikwe or Moki badger people, who bear the epithets Pettsikowakwe and Huhtetcikwe as nicknames. In the time of his grandparents — he is now about sixty-five there was a famine, which drove some of the Badger people to the Hopi, where they lived for some time at Walpi, or at least on the first mesa. This was before his birth; but his mother grew up among the Hopi. Of the older people who took part in this emigration, or their aged descendants, only he, La'tiluhsi, and Naci remain; Tu'otci, Mesta, Hammalu, Kw'ets'a, Yua'ai'ti, A'totsiky'e'a, Ti'ahti, I'pela, and others have died. Once, after their return to Zuñi, there were two "children of Badger people" among the Koyyemshi.1 As the women of the clan were about to bring food to these two Koyyemshi, a man of house 387 (evidently a priest, as this is a Badger house in which one of the first six ettowe or priestly fetishes is kept) called out that each woman was at liberty to carry food to either man. Then the majority carried food to the Koyyemshi who was the child of those Badger people that had stayed at home, while the returned emigrants or their daughters supplied the one who (or whose mother) had lived with the Hopi. Thus the clan became separated (that is, the

¹ There are two children of Badger clan among the Koyyemshi in the years in which the ten personators are chosen from the Ne'wekwe and Big-fire fraternities.— Stevenson, p. 235.



occasion served to mark the public recognition of the two subdivisions). "But there is only one clan." — That these events took place exactly as the old man's information and memory present them, it would be credulous to assert; but the recency of the incidents, and their character, leave little room for doubt that something of the sort happened. The difference of this tradition from the clan migration legends of the Hopi is striking. The Zuñi may recall for a few generations incidents that actually occurred in their clans; they evidently have no sense of separate clan origins or histories: the Zuñi nation alone enters into their historic consciousness.

Towwakwe, Corn.

- 1. Luptsikwakwe, yellow corn.
- 2. Kw'innikwakwe, black corn.
- 3. Co'tsitokwe, "sweet" corn.
- 4. Miky'annakwe, corn-ear-water-people.

There is a mythological reference to the last group, though not specifically as a subclan. After the Zuñi had conquered and destroyed the Ky'annakwe, a boy and a girl of the latter secreted themselves, but at last ventured forth, and when they met a Zuñi, the girl took from her dress two ears of white corn, and extending them said: "See, we are the Mikianakwe (Corn people)." She and her brother were well received by the Zuñi, and the Kiakwemosi, the hierarchical head of the tribe, said to them: "You are the same as our people, the Towakwe." He selected a woman of the Corn clan to adopt them.

Mrs. Stevenson has a passage ³ also about the black corn subgroup. At Heshotayalla the Zuñi found all the inhabitants dead or fled but four, who were inhaling fumes to prevent the odor of the Zuñi from killing them. The old man of the four survivors said: "We were the Yellow Corn people; you have destroyed or driven off all but ourselves; we are saved by inhaling my medicine, but it has made our corn, which we hold in our belts, black, and we are now the Black Corn people." Since that time they and their descendants have been called the Black Corn people. Since his death his ettone has been in the possession of this old priest's descendants, the Kwinnakwe (Black Corn people).

It is probable from Mrs. Stevenson's account of the "Quadrennial Dance of the Kianakwe" that these two passages of the creation myth are reflections of an association between the Corn clan and the ceremony. Thus she says: "The personators of the Kianakwe are always members of the Corn clan and Chupawa Kiwitsine." The Chuppawa Kiwwitsinne or kiva is named after corn parching there, according both to Mrs. Stevenson and my own information.

K'oloktakwe, Crane.

- K'oloktakwe proper.
- 2. Mo-kyissikwe, a tapering striped pumpkin.

The same informant, and others, stated that Shohwitakwe, Deer, and Ma'wikwe, Antelope, could not intermarry; in fact, insisted that they were only one annota. The lieutenant governor also coupled these two as "blue deer" (na'le) and "yellow



¹ Mrs. Stevenson, p. 44.

² Ibid., p. 36.

^{*} Ibid., p. 45.

⁴ Extinct since 1902 according to the same authority, p. 292, where the clan is named Kwinikwakwe.

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Tk E deer," precisely as he coupled the subdivisions of other clans; though in the present case without being able to give a generic clan name. Most informants, however, mention Ma'wikwe as well as Shohwitakwe in listing clans.

One informant mentioned, and another denied, Ance-k'ohanna and Ance-kw'inna, white and black divisions of the Anshekwe or Bear clan, and Tonna-k'ohanna and Tonna-kw'inna, white and black Turkey.

As regards Turkey, a Zuñi stated that the clan ettonne or fetish was once two, am pappa ta an ikyinna, "her older brother and his younger sister" — ettowe are frequently personified and sexed in myths. Perhaps the Ahhayuta or war gods intended the clan to be divided like Pikchikwe. But it is a single clan now, with only one ettonne.

LOCALIZATION OF CLANS.

Victor Mindeleff long ago presented a map of Oraibi, compiled by A. M. Stephen to show the degree to which clans were localized within Hopi towns.¹ The impression which this map has always made on me, and on nearly all colleagues with whom I have discussed it, is that there is no localization to speak of at Oraibi and little anywhere at Hopi, the clans being distributed nearly as if they had been randomly strewn over the pueblo. A number of groups of two or three houses of the same clan are what might be expected as the result of an unusual increase of a family for a couple of generations, such as is bound to occur every now and then, and which would lead naturally to the building of an extension, or the division of an old home between two branches.

It was primarily a wish to determine how far Zuñi conditions are parallel to Hopi ones in this matter of clan localization, that led me to resurvey the modern pueblo, as a basis for the distribution of clans as shown on Map 1.

From this map it appears that groups of families of the same clan, probably each derived from a former single family, occur at Zuñi as among the Hopi. The groups are larger, sometimes covering five and six adjacent houses. But this seems to be only a natural result of the greater mass of population at Zuñi.

The extreme outcome of this tendency is visible in four groups of Pikchikwe houses in the northern and northwestern part of the pueblo, which appear conspicuously in the small map (number 2) devoted to the distribution of this clan.² These four groups contain a total of twenty-two ³

¹ Bur. Am. Ethn., Ann. Rep., viii, pl. 37, pp. 105-108, 1891. This is reproduced, in larger form, and with the addition of similar maps for other Hopi towns, by Cosmos Mindeleff in *ibid.*, xix, 639-653, 1900.

² In maps 2, 3, and 4, houses no longer inhabited in 1916 are included with those inhabited. In map 1 the former are distinguished by brackets around the letters indicating the clan affiliations.

^{*} Counting house 184, now Coyote, as Pikchikwe, which it originally was.

families as my informants reckoned them, or nearly half of the clan in the pueblo proper. It is not necessary to postulate that each of these groups is wholly the outgrowth of an originally single family. There may have been two or more families in the same part of one town block, each of which underwent a period of expansion and thus grew, in the area in question, until they met. A historical family census will be necessary to establish the actual events in these cases. But whether the original nucleus was single or double or triple, the same process has been at work.

This is confirmed above all by the frequency of pairs of adjacent houses of one clan. Such pairs appear for practically all clans and in all parts of the town.

A few specific cases of splitting of houses, or building of an annex, have also been obtained.

In the northeast block the two Crane houses containing rooms 333 and 330 were not long ago held by a single family. The same is true of houses 351 and 354. This was said to be "one house" (i. e., family) whose members lived apart, on two sides. Crane houses 230 and 231 were similarly connected.

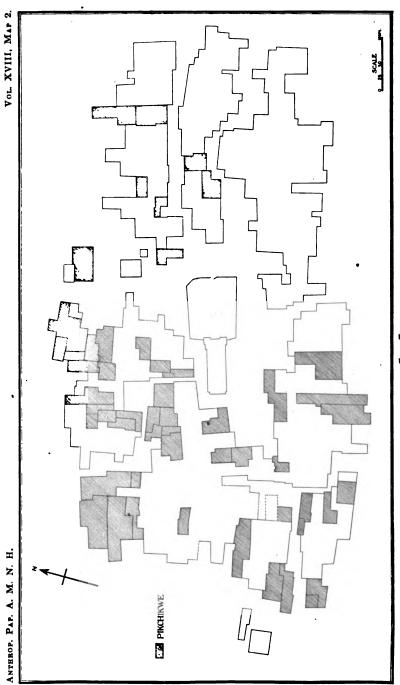
A somewhat different case is provided by the two Pikchikwe houses at the southwest corner of the town, 197 and 198. When Cushing lived in these rooms they formed one house. Subsequently the northwest corner was sold to another Pikchikwe family, though whether connected or unconnected by blood is undetermined. In the same block, Pikchikwe houses 211 and 220 are inhabited by sisters; and 164 and 167 in the north block are occupied by mother and daughter.

Other pairs of adjoining houses of the same clan that are inhabited by relatives and once each formed a unit, are:—

Sun	171, 165, mother and daughter
Frog	278, 281
Frog	343, 345
Eagle	283, 284
Eagle	367, 372
Coyote	325, 323, sisters
Tobacco	72, 42 (probably related)

This process of gradual extension of a single family must tend to lead to random local clustering, as distinct from definite localization with reference to the town as a whole. When an entire family moves to a new home, or part of it secedes, both the clustering and such former localization as there may have been, are impaired. Such shifts are frequent today, particularly to the suburbs; but they constantly occurred in the old days also, when the population was wholly confined to the pueblo proper. They are of interest because they demonstrate that if true localization of clans ever existed, it would have been seriously disturbed in two or three genera-

¹ Houses are referred to by the numbers which they bear on maps 1 and 5 and in table 3.



DISTRIBUTION OF THE PIKCHIKWE CLAN.

DISTRIBUTION OF FIVE SMALL CLANS.

DISTRIBUTION OF THE TURKEY AND CRANE CLANS.

tions, and perhaps largely obliterated in two centuries and a quarter. In short, the map of Zuñi gives but limited evidence of the localization of clans as integral bodies today. In addition, there are several processes at work which are strong enough to have very thoroughly disarranged such blocking of clans into units if it had existed when the town was founded or resettled in 1693.

The first of these causes, and perhaps the most potent, is the entry of a woman into her mother-in-law's home. This is contrary to Zuñi custom: but it constantly happens. I was at first inclined to believe my informants' statements that this was a modern decadence of ancient institutions. Among most Indian tribes such throwing out of gear of native customs is only too sadly familiar to the ethnologist. But I no longer consider the practice to be an innovation at Zuñi. In the first place, the whole fabric of Zuñi social and even economic life is too thoroughly un-American to make it likely that it should have yielded at this one point alone. There are alien elements in this life; but they have not in the least altered the plan of ancient custom. Secondly, I have learned of cases of old women going to live in their husband's houses, and even the grandmothers of middleaged women. Finally, there is no reason to believe that the motive which usually underlies the practice today — incompatibility or quarrels between the son-in-law and one or more of his wife's house mates — should not have been equally potent in the past. I conclude therefore that the act of the wife joining her husband was anciently in the same status as the act of marrying into one's father's clan: both were contrary to recognized usage and were viewed with disfavor, but both were practised. I should estimate that from five to ten percent of Zuñi women always flew in the face of propriety to live with their husbands rather than lose them; and I venture to say that in the year in which Coronado came complaint was nearly as frequent as now about the degeneracy of the existing generation. The generalized past is always right compared with the present, because, its lapses being forgotten, it takes shape as the embodiment of an ideal, against which the present can offer only an imperfect reality.

Now often, the stay of a woman in her husband's natal home is only transient; or if permanent, her offspring are outnumbered by the children that belong there. But sometimes it must happen that her husband's sisters are childless, or that they too go away, or that he has none; and then, in a generation or two, the women of that house are no longer of the original clan, but of that of the introduced ulani. Here are some such cases.

House 68, originally Badger, is now Pikchikwe, in Zuñi reckoning. Two Badger men remain, the women have died, the only adult female inmate is the daughter of the introduced Pikchikwe wife of one of the Badger men; and she has a Corn husband and four Pikchikwe boys and girls.



184, originally Pikchikwe, has become Coyote through the entry of a woman from 434.

x161 and x162 were originally one Bear house. The husband was Badger. His brother, married to a Tansy Mustard woman in 159, disagreed with her house mates. He therefore bought from his brother, or rather from his brother's Bear wife, the x161 part of the latter's house, and there installed his wife and himself. x161 is therefore a "new house," and the Tansy Mustard clan is resident in a new quarter.

House 159 itself seems to have been once subjected to an intrusion, since it contained Badger men and women as well as Tansy Mustard. A Badger woman from it married into Sun house 214, on the opposite side of town. The Sun people have left, for one reason or another; and 214 is now Badger.

89 is an old Deer house, which remains to this clan. But the grandmother of the woman now in it entered 141, which then belonged to another clan. Now 141 is Deer.

328, or perhaps formerly a building adjoining it on the west, is a Tobacco clan house, probably derived from 42. No Tobacco women of this house are left; but its senior male was joined by his Pikchikwe spouse; and 328 is now indisputably Pikchikwe, as indeed the Zuñi invariably reckon it.

72 is still Tobacco; but one of the men born in it brought in his Sun wife. They separated; but their Sun daughter remains in her natal home. Should her father's people pass away without female progeny, her presence would convert 72 from a Tobacco to a Sun house.

347, the sole Yellow Wood house, bids fair to be soon lost to that clan. An old Yellow Wood woman inhabits it with her son and his Sun wife, who belonged in 261. The old lady herself once left home, and spent part of her married life in Frog house 278

440 is Coyote, and likely to remain so; but it harbors a Pikchikwe wife.

454, Pikchikwe, held for a time a Crane woman from 333. The cause of her leaving her home is not known to me. But in 1916, in a prolonged and serious illness, she returned to her mother in 333, and her husband came with her. Perhaps trouble effaced disagreements that had occurred.

There are further cases of the present habitants of a house emanating from another: the causes are not clear to me, but probably unconnected with the wife following her husband. Thus 226 is out of 94; 186 out of 373; 268 out of 87; 196 out of 33. These are all instances within the old pueblo proper.

Houses are also bought and sold. Besides x161 and 197, already mentioned, the following cases have come to notice.

207 was originally Eagle. The owners moved to 548 in the suburbs. A Crane man from 135, across the street, bought the vacant house for his wife, a Sun woman out of 214 adjoining. 207 is therefore now Sun instead of Eagle; but both husband and wife remain within a few feet of where they were born.

Houses 164, 165, 167, and 171 were formerly held by a single Sun family. Then 167 was sold to a Pikchikwe family, of which Tcuyati was the head. 167 is an interior house; a small room between it and the alley was not included but retained by the original owners, which accounts for its being part of 171 now. The new-

comers in 167 wanted more space; two sons-in-law preferred separate establishments; so 164 was bought. One sister now lives here; the other, married to the head priest of the bow, Tsawela, lives with him and her mother in 167. The unsold portion of the Sun house was also divided. The mother did not agree with her Chaparral Cock son-in-law; so she retained the rear rooms, 171, and her "children" inhabit 165. There are thus two clans and four households where formerly one was counted. In each case the older people inhabit the interior rear, the younger generation the front abutting on the street. It would be erroneous, however, to think of a complete breach between mother and daughter in either case. There may have been friction; but the front and rear are connected, the doors generally stand open, and to all appearances the fullest amity prevails. In fact, in an enumeration the Zufii generally count 164 and 167 as one house, and 165–171 as one. There are probably many households in which a similar understanding as to privacy prevails, and which might with equal justice be reckoned as containing two or three families each, if the circumstances of their life were known in equal detail.

House 67, consisting chiefly of one room fronting on the street, was sold about 1914 to the Sun woman and Badger man who had been living in the adjoining interior house 50. In this case the families may be supposed to have been related, and the original owners of 67 to have moved outside the pueblo. The price paid was: one buckskin; one ehha or woman's gown; four necklace strands of old olivella shell beads; 2 sattowe or loops of turquoise beads; and ten dollars in money. The kind. of property given is typical of Zuni trading. There is much wealth in the town, but little American money. Good bead necklaces are reckoned at ten sheep each; at least that is what the Navaho gave for them until recently. Turquoise beads of course vary in value according to quality of the stone and fineness of workmanship. Two average loops were sold to a Navaho recently for eighty-seven goats. Exceptionally good strands are rated at over a hundred dollars. The total paid for this house may therefore be conservatively estimated as the equivalent of one hundred and fifty dollars. It is evident that this sum represents more than the labor required to build a small house, and that part of the consideration was given for title to the site.

270 was bought by Crane people from its original Frog owners, presumably the inmates of 267.

373 is an old Coyote house. The bulk of its inmates long ago settled in 186. An old woman however remained behind. The northern end was sold to some Corn people, apparently relatives out of two houses, 22, which was a ruin in 1915, and 113, which was then inhabited. After the old woman's death, her relatives in 186 sold the remainder of her house to the same Corn people, who in July, 1916, had pulled down the southern corner of the structure and were remodeling the remainder.

Some years ago a Corn family, possibly also out of 22, bought the unoccupied southern end of Crane house 361. They failed to make payment, however, and soon after actually purchased the Pikchikwe house 300, across the street from 361 and adjoining the Corn house 299. The Pikchikwe owners of 300 moved into outside house 536.

The degree of clustering of houses of the same clan within the old pueblo is indicated by the following list, which comprises inhabited, abandoned, and ruined houses as determined in 1916:



	Total Houses	Separate Clusters
Pikchikwe	50	24
Eagle	16	12
Badger	18	13
Sun	16	11
Turkey	· 16	13
Corn	20	11
Crane	13	9
Frog	10	8
Coyote	10	9
Bear	7	7
Tansy Mustard	5	4
Tobacco	3	2
Deer and Antelope	4	4
Chaparral Cock	1	1
Yellow Wood	2	2
	191	130

The total number of house groups of the same clan is fully two thirds the number of houses; which means that a large proportion of the houses stand isolated, so far as clan affiliation goes. It is also observable that the clustering is pronounced in proportion to the strength of the clans, which indicates that it is accidental, that is, influenced by the various causes that have been discussed, and not in any considerable measure a relic of ancient localization. If we assume ancient restriction of each clan to a certain quarter, a clan of five or ten houses would in the course of time come to have this original arrangement disturbed in the same degree, that is, in the same relative proportion, as a clan of fifty families. This is clearly not the If, on the other hand, the various clan houses had been originally distributed quite randomly, it is extremely unlikely that in a clan of only five families any of these would find themselves in juxtaposition; a clan of ten houses might have possibly one pair adjoining; while in a clan of fifty in a town of two hundred houses, a tolerable number would be bound to be adjacent. It is evident that this is more nearly the condition which really obtains; and while the actual clustering is apparently somewhat greater

¹ The one discrepancy is Corn, with twenty houses in only eleven clusters, including one of six houses — 88, 19, 22, 31, 43, and 38. It is to be noted, however, that Corn is the only clan that shows more houses in the foregoing list than are accredited to it as inhabited in the pueblo and suburbs combined today: twenty former houses in the town, as against nine in town and six outside today. The other large and medium sized clans uniformly show an increase from the foregoing list to table 4; due either to a readier splitting of families as they move into the open tract outside the former town lines, or to incompleteness of information given regarding the abandoned and often totally broken-down houses in the interior of the pueblo. However this may be, the Corn data are so divergent that the list proportion of twenty to eleven must be used with reserve.

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than mere mathematical probability would produce, this excess is easily accounted for by the occasional growth of a family into an adjoining house or two.

It appears then that there is no warrant for the assumption that Zuñi! was ever populated by clans settled in blocks comparable to the ghettos or foreign quarters or negro wards of our cities. People of the same clan do often live in adjoining houses; but this seems due mainly to household growth and connections of much the same type as occur among ourselves, and little, if at all, to any sense or operative force of clan solidarity. The modern conditions in the Hopi towns, as revealed by the published maps, appear to be thoroughly similar; and there is every reason to believe that the same causes have been at work there in the past as at Zuñi. In fact, I doubt very much if it would have occurred to any one as worth while even to discuss clan grouping at Hopi but for the ungrounded assumption that a clan is a discrete and self-contained unit within a heterogeneously complex community. As this is obviously not the fact today, the only possibility that remained was to believe that it had been a fact, to construe every possible bit of evidence as a vestige of such an original condition, and to forget the overwhelming mass of data not in accord with the chosen interpretation.

What is established for Zuñi and by implication for Hopi, must be regarded as having been the probable condition in the Rio Grande pueblos also. In fact, I trust the foregoing discussion has made it reasonable that clans may be only subdivisions of the community wherever they occur, and that to take for granted that they are or anciently were disparate and self-sufficient units independent of the tribe, is never legitimate unless there is specific and impartially weighed evidence in that direction.

Of the following tables, 3 lists all the houses inhabited in Zuñi and the environs in 1916 as well as the empty and ruined houses, as far as these could be determined. The reference in the first column is to the house number as shown in map 1 or 5.\(^1\) The second column gives the clan affiliation of the house, the third the clan of the male head of the household or best known man in the house. Vacant houses are indicated by parentheses. The fourth column lists former ownership, movements, and miscellaneous facts.



¹ Maps 1 and 5 refer to 1916. Maps 6 and 7, on which they are based, were made in 1915. The usual amount of building and rebuilding took place in the intervening year; but the discrepancies are on the whole so slight, and affect the clan distribution so little, that it did not seem worth while to revise maps 6 and 7 at innumerable minor points. Some of the changes are noted in the final section on "The Town."

TABLE 3.

ZUNI HOUSES IN 1916.

	Mai	n Block	
House	Clan	Man	
1	P	Cr	
3	${f E}$	Cr	
7	P	${f E}$	
18	P	\mathbf{Cn}	
13	(F)		
19	(Cn)		>526b1
25	Ba	P	
29	$\mathbf{T}\mathbf{k}$		
43	(Cn)		Doubtful
61a	(P)		>454
60	(P)		
65	· (P)		Possibly part of 55
55	(P)		>501b
57	P	Ba	
54	P	Ba	
53	Be	Ba	•
52	Ba	Be	•
50	(S)		
67	S	Ba	Bought by 50. Originally S
68	P		Originally Ba; P o married in
48	• (Cn)		Doubtful
46	(Be)		
51	$\mathbf{T}\mathbf{k}$		
69	${f F}$	ន	
76	P	\mathbf{Cn}	
77	\mathbf{Ba}	\mathbf{Ch}	•
81	\mathbf{D}	S	
74	\mathbf{Be}	P	
72	. Th		>557, 561
42	(Tb)		>328?; now part of 72
4 0	\mathbf{Cn}	Cr	
70	P	Tk	
38	\mathbf{Cn}		
31	(Cn)		Now part of 38
33	(Be)		>196, 534f
22	(Cn)		Once part of kyappatcunna; >373
93a	(E)		
73	(A)		
108	${f E}$		
109	(\mathbf{E})		>555b
113	(Cn)		>373

¹ The sign > is to be read: "moved to."

	Mai	n Block	
House	Clan	Man	
140	(Ba)		>517a
139a	(P)		•
139	ŝ	P	
137	Cr	_	
135	Cr	P	
126	P	Cn	
123	P	-	
121	M		>576
120	M		>577 .
119	P	${f F}$,
106	Ba	Be	
104	M		
96	(P)		>91 >502; now part of 94 Ba
95	Ba		> 01 > 002, non part of 01 Da
94	Ba		>555a
91	S	P	La-piktcikwe man
89	$\tilde{\mathbf{D}}$	Ba	za pietonewo man
88	(Cn)	Da	
87	P	Tk	>268
84	P	s	× 200
01	•	~	
	Nor	th Block	
141	D	Tk	An offshoot from 89
162	Tk	Ba	
159	M		Also Ba
x156	P	Be	
186	Сy	Ba	ex 373; originally S
189	P		
190	E		>506
191	P		Originally E, part of 190
194	P	S	>532x
196	Be	Сy	ex 33
184	Cy	٠,	Orig. P; Cy o ex 434 married in
182	P	${f E}$	01-g. 1 y 0 y 0 1 10 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
181	$ar{\mathbf{F}}$	P	
176	(P)	-	
177	Ċr		
179	Tk		Orig. S, >518c
175	(S)		>530b
172	Š		7 5555
171	ŝ		
165	Š	\mathbf{Ch}	Daughter of Q in 171
164	P		Daughter of \circ in 167. Orig. S, bought from 171
167	P ·	Су	Orig. S, bought from 171
x162	Be	Ba.	
x161	M	Ba	Orig. Be, bought from x162; the husbands are
			brothers; M ex 159.
x160	${f E}$		•

	Nor	th Block	
House	Clan	Man	
187	(P)		>149; relatives of 189
161	(P)		>520
163	P		
150	P		
149	(P)		ex 187, >541
146	(Cn)		U. 101, 7 U.1
145	(E)		>514
142	E	Be	7011
		thwest Block	•
197	P	Ba	•
198	P	Cn	
201	Ē	On.	
206	Ba		
214	Ba	s	Onio S > 502 · Do O on 150 mondal in
207	S		Orig. S, >503; Ba 9 ex 159 married in
201	В	Cr	Orig. E, >548; Cr & ex 135 bought for S Q ex 214
211	P		22
220	P		Sister of ♀ in 211; see 510a, b
221	(Cn)		>528
222	(P)		>549b
223	(Tb)		>558, 549a, 517a
225	(P)		>556
226	Ba		ex 94
		-	
		th Block	
230	Cr	S	
231	(Cr)		>547; relatives of 230
233	(F)		>527b
235	(Be)		•
247	Ba		
249	(Cy)		>454a
257	P	Tb	
259	P		
267	${f F}$	P	
268	P	${f F}$	ex 87
278	${f F}$		
281	(F)		>546; relatives of 278
283	(E)		>575
284	(E)		>515; orig. one house with 283
270	(Cr)		Orig. F. Bought.
263	P	D	Ong. 1. Dougnu.
261	ŝ	_	>388
252	Ba.	Be	/ 000
240	Cn	P	
240 228	(P)	Ba.	
220	(I)	Da	•
		east Block	
454a	$\mathbf{C}\mathbf{y}$		ex 249
454	P		

	Northe	ast Block	
House	Clan	Man	
453	Tk		
328	P	\mathbf{Tb}	P 9 married in
333	Cr	Ba	
330	\mathbf{Cr}		Relatives of 333
339	P	S	
334	${f E}$		
336	${f F}$		
340	P	Cr	
342	(YW)		Now part of 340 P
343	` F		• • • • • • • • • • • • • • • • • • • •
345	(\mathbf{F})		Relatives of 343
347	` Y W		Also a S Q ex 261 married in
351	Cr		
354	(Cr)		Relatives of 351
357	P	\mathbf{Cr}	579, P, may be a separate household from this
360	(P)		Sometimes reckoned part of 357
361	Ċr		302-002-05 10010202 part 02 001
369	Cy		
367	E		ex 372
372	Ē		3. 3. <u>2</u>
373	Cn		Orig. Cy, >186; bought by Cn ex 22 and 113 in 2 parcels
	East B	lock	
286	Cr	IOUR	
290	Tk		
291	Tk	Ba	
292	P	Tb	•
295	(P)		>7
296	s		
299	(Cn)	Tk	>540
300	Cn		Orig. P, >536; bought by Cn after south end of 361 bought but not paid for
305	S	Cr	>537a ·
312	S	Cr	2001a
316	Tk	E	
320	Ch	E	
323	Су	Cr	
325	Су	E	Sister of ♀ in 323
020	Oy	19	Sincer of \$ 111 020
	Southeast	Block	
384	Ba	P	
378	Ba	${f E}$	
387	Ba	P	
388	S		
389	$\mathbf{T}\mathbf{k}$	Ba	
391	Tk		
397	\mathbf{Cn}		
398	Tk	Cn	•

	Southea	st Block	
House	Clan	Man	
406	Cn		•
407	(E)	(S)	
408	Tk		
422	\mathbf{Tk}		
434	(Cy)		>184
424	Cy	${f E}$	
428	E	P	>543, in part
445	Tk	$\dot{\mathbf{E}}$,, _E
446	s	Ba	
452	Tk	E	
448	s	_	
442	Ba	E	
440	Су	P	
414	Cn	P	
413a	Tk	Ba	
415	Cr	Da	
412	Cn		•
402	(Cn)		Relatives of 406
394	Ba		10ctatives of 400
352	Da		
Outside	e Houses –	-North of R	liver
573	P	$\mathbf{T}\mathbf{k}$	
574	Ρ.	${f E}$	♂ ex 407
575	${f E}$		ex 283
576	M		ex 121
577	M		ex 120
501a		\mathbf{Cn}	o ⁿ ex 88
b	P	M	Built by former husband now in 501a; ex 55
502	P		•
503	S	P	ex 214
570	E	Ba	
504a	P		
b	P		Sister of 9 in 504a
0	F		
ď	$ar{\mathbf{F}}$	${f E}$	Sister of Q in 504c
505	P	$\overline{\mathbf{D}}$	
505x	Ē	$\overline{\mathbf{D}}$	•
506	$\tilde{\mathbf{E}}$	Ď	ex 190
509	Cn	P	
510a	P	Tk	
b	P	F	Sister of 9 in 510a; ex 211, 220
511	P	Ē	52502 02 + III 0200, 0X 221, 220
512	Ē	Tk	
513	Cr	S	
513x	Cn	P	
514	E	•	ex 145
51 4 515	E	P	ex 284
517a	· Tb	E	ex 223
517# b	P	22	GA MAU
U			

Oı	utside Hous	es — North	of River
House	Clan	Man	,
c	P	Cr	
d	S	P	
е	Ba	Ch	ex 140
f	Cn	Ba	Son of ♀ in 517e; ♀ ex 373
518a	P	S	Son of Q in 518b
b	S		
c	S		ex 179
519	Cr	S	
520	P	Ba	ex 161
521	$\mathbf{T}\mathbf{k}$		
526a	Tk	Cn	Orig. F
b	\mathbf{Cn}	P	Sister of J in 526a; ex 19
527a	${f F}$		
b	\mathbf{F}		ex 526a, ex 233
528	Cn	P	ex 221
529	(F)		ex 181
580	Сy	Cr	
530a	E		
b	S		ex 175
C	S		ex 91
532	P	_	
532x	P	${f E}$	ex 194
533	Tk		ex 534a
534b	E		
c ,	E		
d	Ba		
e f	P		00
535	Be E	P	ex 33
536	P	r	200
537a	S	M	ex 300
ж b	Ba.	M E	ex 305
538a	Ba.	S	
b	Cy	P	
539	E	•	
540	Čn		. ex 299
541	P		ex 149
542a	Tk	Ba	CA 110
b	E	Cn	
543	\mathbf{E}		ex 428
			··· —-
	ıtside Hous	es — South	of River
544	${f E}$	A	
546	\mathbf{F}	Ba	ex 281
547	Cr	S	ex 231
548	<u>E</u>	_	ex 207
549a	Tb	P	ex 223
ь	P	\mathbf{Cn}	ex 222

Outside	e Houses —	-South of 1	River
House	Clan	Man	
564	${f E}$		ex 548
555a	Ba	P	ex 94
b	${f E}$	Ba	Brother of Q in 555a; Q ex 109
553	P		
556	P		
557	$\mathbf{T}\mathbf{b}$		ex 72
558	Tb		ex 223
561	Tb		Sister of Q in 557
560	P		

Table 4 shows the number of inhabited houses of each clan in each of the blocks or parts of Zuñi, including those in the environs within a quarter mile radius of the pueblo—all at a greater distance, in fact, are only temporarily occupied farming houses, or summer residences.

TABLE 4.

Inhabited Houses, 1916 ¹

Clans			Bloc	ks of T	`own			Outs	ide ²	Total
	Main	N.	s.w.	S.	N.E.	E.	S.E.	N.	S.	
Pikchikwe	13	9	4	4	5	1		19	4	59
Eagle	2	3	1	_	3		1	14	4	28
Badger	6		3	2	' —	_	5	4	1	21
Sun	3	3	' 1		٠ — '	3	3	7	_	20
Turkey	2	2		—	1	3	. 8	4		20
Corn	2	_	_	1	1	1	4	6		15
Crane	2	1		, 1	4	1	1	2	1	. 13
Frog	, 1	1	—	2	2	_		4	1	11
Coyote	<u> </u>	2	-	_	2	2	2	2	_	10
Tansy Mustard	3	2	i —	-		_	1	2		7
Tobacco	1	_	-			_		1	4	6
Bear	2	2			· —	_		1	i —	5
Deer	2	1	<u>'</u> —	—	_	_	·			3
Chaparral Cock		_	<u> </u>	_		1		_	. —	1 1
Yellow Wood	; —	_	-	<u> </u> —	, 1	_	_		_	1
All Clans	39	26	9	10	19	12	. 24	66	15	220

¹ A number of Zufii families own houses, ruins, or house sites in the pueblo and a new home in the outskirts. A few keep the old and the new home in repair, but live mostly in the town. In all such cases only the house actually or usually inhabited has been counted in the table.

² N: North of the river; S: south of the river.

It is evident that the clans have abandoned the old town in very different Eighty-one families out of 220, or nearly thirty-seven percent of the total, now inhabit the outskirts. Pikchikwe, Sun, and Corn keep close to this proportion. Eagle far exceeds it, barely a third of its families remaining within the pueblo limits. Badger, Turkey, and Crane have moved in only a fourth to a fifth of the cases. But it is doubtful whether these variations possess any significance. The figures are small, and therefore subject to accident. If half a dozen additional Eagle families had elected to stay in their old homes, the proportion for this clan would have been substantially normal instead of quite aberrant. Above all, there is no conceivable machinery which would influence a clan to act as a unit in such matters. If one family has moved, a related one is more likely to follow it; but relationship operates in the male line as well as through women; and it would still be necessary to account for a greater first inclination to drift out. If the Eagle clan had chiefly occupied interior houses in the pueblo, which are now generally felt to be less desirable than those with street frontage, a reason would be evident; but such is not the case. The small Tobacco clan may prove a typical instance. Five out of six Tobacco houses are now in the outskirts; but all the inmates of these, comprising virtually the whole clan, are out of two old houses, 72 and 223. When the bulk of these families moved, the "clan" had moved. Yet it would be extreme to attribute anything like a "clan spirit" or sense of group solidarity to these two households. Had one family remained where it was, the percentage of emigrants would have been only fifty instead of eighty-three; had both elected to stay, it would have been zero.

There are fifty-two vacant houses in the pueblo—at least, I could obtain reliable record of only this number; but eighty-one occupied homes in the environs. On the face of things, there are therefore about thirty more families in Zuñi today than twenty years ago. I cannot explain this discrepancy which has been alluded to before; but suspect that in the main it is due to the former inhabitants of completely destroyed and torn down town houses having been lumped or overlooked by my informants.

For the study of clan localization, the old pueblo is however more important than the modern extended town. I therefore summarize in table 5 the evidence of map 1, with the clans arranged in the order of their present strength.

Certain distributional features are apparent, such as the absence of Pikchikwe from the Southeastern block, and the strength of Turkey in this section. More significant results are however obtainable from a grouping of the blocks. The three eastern blocks are apparently more recent than the others. The houses also generally are larger and stand on level ground.

TABLE 5.								
Inhabited	AND	FORMER	Houses	WITHIN	THE	Pueblo	Lines.	

Clans		Blocks							
	Main	N.	s.w.	s.	N.E.	E. ·	S.E.		
Pikchikwe	18	13	6	5	6	2		50	
Eagle	4	4	1	2	3		2	16	
Badger	8		3	2	-	_	5	18	
Sun	4	4	1	1	_	3	3	16	
Turkey	2	2	_		. 1	3	8	16	
Corn	9	1	1	1	1	2	5	20	
Crane	2	1	_	3	5	1	1	13	
Frog	2	1		4	3	_	i — I	10	
Coyote	_	2	<u> </u>	1	2	2	3	10	
Tansy Mustard	3	2	-			_	' '	5	
Tobacco	2	_	1	—	_		: - '	3	
Bear	4	2	-	1				7	
Deer	2	1	l —	' —	· —	<u> </u>	' ;	3	
Chaparral Cock	-	_	l —	ı —	_	1	! -	1	
Yellow Wood			_	-	2	_		2	
(Antelope)	1	_	-	-	_	-	-	1	
Total	61	33	13	20	23	14	27	191	

The three southern blocks do not form such a natural or historical unit; but, temporarily, they may also be contrasted with the remainder of the town. This gives an eastern half of the town about half as populous, some decades ago, as the western, and a southern fringe also about half as strong, in number of houses, as the larger northern portion. The clan distribution in these respective halves is shown in table 6.

Table 6 at once discloses the principal basis of the "phratral grouping" by cardinal directions for which Cushing has made himself responsible, and which has been previously listed in table 2. It appears that Cushing's informants merely assigned each clan to the quarter in which it happened to be proportionally most heavily represented in the town. As the northern and western portions of the town are so much more populous than the southern and eastern, the relative rather than the absolute numbers must be considered. Thus Badger has thirteen houses in the west, five in the east, yet this is nearly the proper proportion for these directions. But eight northern houses against ten southern, with southern houses constituting less than a third of the town, is a notable deviation from average,

ANTEROP. PAP. A. M. N. H. ဌ 유 518 Ç. eii eiie [] *[[] 255**8**]*** ;;;} <u>[]</u> **_** Ֆոո ZUÑI AND EXPANSIONS 1915 SCALE - C-447 ₩.

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TABLE 6.

CLAN DISTRIBUTION BY QUARTERS OF THE PUEBLO.

Clan	4 Western Blocks	3 Eastern Blocks	4 Northern Blocks	3 Southern Blocks	Indicated Localiza- tion	Cushing's Phratral Grouping ¹
Pikchikwe	42	8	39	11	W	M
Eagle	11	5	11	5	none	\mathbf{U}
Badger	13	5	8	. 10	S	\mathbf{s}
Sun	10	6	11	5	none	$\mathbf{U}\left[\mathbf{M}\right]$
Turkey	4	12	. 8	. 8	${f E}$	E
Corn	12	8	13	7	none	S[M]
Crane	6	7	9	4	E or N	N
Frog	7	3	6	4	none	D
Coyote	3	7	6	4	E	W
Tansy Mustard	5	_	5		W or N	W[S]
Bear	7		6	1	W or N	W [N]
Others	7	3	9	1		
	126	64	131	60	ı	

sufficient to account for Badger being reckoned a "southern" clan. The situation is analogous for Turkey, Crane, Tansy Mustard, and Bear. Pikchikwe, as the conspicuously largest clan, was best fitted to represent the Middle, if there were to be seven "phratries"; and Eagle and Sun would obviously stand for the Above, and Frog for the Below, by a transparent symbolism, once these directions were to be provided for. In fact, aside from one or two of the very small clans, Coyote is the only clan for which the actual distribution and the phratral grouping definitely clash. We have an assignment to the west, when east is obviously indicated. The explanation is found in a ritualistic grouping of prey animals by directions, similar to that of birds and colors: this places the coyote in the west.²

¹ Bur. Am. Ethn., Ann. Rep., xiii, 368, 1896. Brackets contain variants given by Cushing in a subsequent manuscript quoted in *ibid.*, Bull. 30, part 2, 1018, 1910.

² The Zufii animals of the six directions (Stevenson, p. 409; Cushing, Bur. Am. Ethn.; Ann. Rep., n, 16, 1883) are: N, Panther; W, Bear; S, Badger; E, Gray Wolf; U, Eagle, D, Shrew; with snakes and ants for all directions. In an account of the prey gods (p. 20 seq. of the same work), Cushing gives: N, Panther; W. Coyote; S, Wildcat; E, Wolf; U, Eagle; D, Mole. This mythologic and ceremonial symbolism may account for the directional assignment of the Bear, Badger, and Eagle clans, as well as Coyote; but it covers only a fraction of the Zufii clan system. If an explanation of the Cushing grouping is to be made on a basis of symbolism at all, rather than on the ground of tendency toward clan localization in the town, it will perhaps be through a general Pueblo scheme of clan grouping by directions, some hints of the existence of which are discussed below.

It is even possible to pronounce Cushing's first grouping ¹ as better, that is, more in accord with the geographical facts that seem to have determined the native classification, than his second one.²

I do not wish to be understood as casting any doubt upon Cushing's grouping. It is precisely the sort of thing which I believe emanates from the speculations of Zuñi priests. I wish however, to characterize it as an esoteric reflection of intrinsically accidental facts, and not in any sense a true phratral grouping, that is, a social classification connected with the actual clan organization or developed from it.

Map 5 sketches the distribution of clans in the outskirts of modern Zuñi. On account of the scale needed to include the considerable area, it has been impossible to combine an outline of the houses, as given in Map 7, with a designation of their clan pertinence, except on a sheet that would be unwieldy. Only clan symbols have therefore been introduced in Map 5. Contiguous houses are indicated by underlining of the symbols. Bracketed letters indicate that the house in question is uninhabited, or generally so, the central home of the family remaining in the old pueblo. Letters in parentheses show exceptional cases of houses in the possession of men, the women of the particular families being dead. Arrows indicate known movements of families. Arrows rendered in dotted lines indicate the removal of men.

Two inferences can be drawn from this map, which deals with conditions under which certain tendencies of Zuñi clan and house life are freer to express themselves than in the cramped pueblo proper.

The first is the cohesion of related families. This shows itself under the guise of a grouping of houses of the same clan. The essential factor that causes this collocation, however, appears to be blood relationship. Without a complete individual and family census, it is impossible to establish this contention with thoroughness; but I received a strong impression from Zuñi gossip and casual talk that such is the case. In the old town, a son-in-law or brother-in-law might wish to erect a separate roof for his wife, but the confined position of her natal home would often force him to choose between building a new house in a remote part of the town, or remaining with her in her ancestral one. The former alternative would not usually be resorted to except where pronounced temperamental friction offered a definite stimulus; for the Zuñi woman appears to have a strong attachment of some sort for the quarter or corner of town in which she has lived. If, on the other hand, the couple remained in the wife's natal home, they would

¹ Column four of Table 2; last column of Table 6.

² Column five of Table 2; brackets in last column of Table 6.

tend to be regarded, by the population in general if not by their fellow inmates, as merely part of the established household, at least until long years or changes in the composition of its membership resulted in their recognition as a separate though closely kindred family. In the open outskirts, with a fresh start, each man is able to build a house of his own for the one of the several sisters or daughters that is his wife, and recognition of the distinctness of his hearth is prompter and wider, even though his brothers-in-law erect homes adjacent to and communicating with his own. Interior communication seems to exist in practically all cases of adjacent houses, whether of the same or different clans.

It is further likely that where families of diverse clanship adjoin in these . new and unrestricted portions of the pueblo, investigation would reveal that they also were in many instances connected by blood, kinship in the male line however veiling the tie under a diversity of appellation. So, among ourselves, if Smith and Smith live in adjoining houses, even the stranger suspects that they are brothers, whereas if Smith's home is next to Brown's, indication is lacking of the possible fact that they are brothersin-law or husbands of sisters. Again I regret to have few positive data to offer: any considerable and reliable collection of facts of this kind involves not only the expenditure of much time in investigation, but should be preceded, if possible, by a certain degree of familiar acquaintance. The point is made here in order to guard against an over-hasty interpretation of the distributional features shown in the map through the sole means of the conventional clan pattern. There certainly are other factors involved, including patrilinear kinship; the precise degree of effect of these, in balance with the factors of matrilinear relationship and actual clan consciousness, remains to be ascertained.

The following are a few instances of blood kinship determining the position of recently erected houses:—

In consonance with clan relationship
504a and 504b, both Pikchikwe: sisters
504c and 504d, both Frog: sisters
557 and 561, both Tobacco: sisters
In violation of clan relationship

517e, Badger; 517f, Corn; Badger husband is son of 517e 518b, Sun; 518a, Pikchikwe; Sun husband is son of 518b 526b, Corn; 526a, Turkey; Corn husband is brother of 526b 555a, Badger; 555b, Eagle; Badger husband is brother of 555a 407, formerly Eagle; 574, Pikchikwe; Eagle husband is out of 407²



Several parallel cases within the pueblo have been previously given.

² Compare 207, originally Eagle, now Sun ex 214 with Crane husband ex 135, both adjacent houses.

The second point that emanates from Map 5 is that the Zuñi do not readily move their houses from one side of the town to another. With the modern houses in the open, there is no reason why they should not be located at random. Yet such cases of centrifugal shift as have been observed and recorded on the map by arrows almost invariably involve mainly a radial extension from the center of the town. Because a family has lived fifty or a hundred feet north of the east and west axis of the old pueblo. seems no reason why when they build a new house an eighth or a quarter of a mile out, they should quite regularly locate north of the town. But the impulse is there. The force of this inclination is particularly marked for the former inhabitants of the southern blocks, since in most instances a southerly removal by them involves a settlement across the river, and particularly since all houses on that side of the stream more than a very few years old were erected prior to the convenience of a permanent bridge. Modern as all the particular circumstances involved are, they undoubtedly reveal a rather deeply rooted tendency of Zuñi custom toward orientation of the house with reference to the town. This tendency may be presumed to extend in considerable measure to other pueblos also, and in all likelihood to have been operative even in the prehistoric period.

It is also plain, though this is a matter connected with pueblo growth rather than the status of the clan, that the influences toward expansion are slow in gathering headway and continuous once they are in motion. It was fear of Navaho and Apache raids that avowedly drove the Zuñi to swarm in the old pueblo cluster. That danger must have been nearly over by 1870 and altogether a matter of memory by 1890.² The first hesitating outposts seem however not to have been erected until some time after the latter date, and the movement as such gained little headway until 1900 or subsequently. Even within the period since then, many more outside houses have been built in its last half than in the first, it is said; and every few months see a new addition. In August, 1916, more than a third of the families of Zuñi had given up residence in the town of their mothers.

Of forty cases, twenty-seven, or two thirds, are clearly of this character; four, or only one tenth, are contrary, as from the south side of the pueblo to the northern environs; and the remainder are indeterminate, as from the west to the north, or from southwest to northwest.

² I am told that the last Navaho raid on the town took place during the birth of a woman who was pointed out to me and who appears to be fifty years or a little older. This would indicate 1865. Since then, the Zufii and Navaho have only skirmished or ambushed one another in the country, the former declare. The last victory dance was held a few years ago over the scalp of a Navaho child found dead in the hills. This incident was not due to a recrudescence of the old hatred of the Navaho, for the two tribes visit and associate, but to a desire to maintain the ancient ceremony, for which an occasion is requisite.

SIZE OF CLANS AND FAMILIES.

The size of the Zuñi clans shows an even gradation from the largest to the smallest. The one conspicuous break is between the largest and the second largest clan. Pikchikwe comprises more than a quarter of the families and therefore presumably of the population of the town. It is thus no wonder that its subdivision into Raven and Macaw, or Dogwood and Raven-Macaw, is far more prominent in the native mind than the subdivision of any other clan. It is also conceivable that Pikchikwe may be a group of syncretized clans; and that a slight stimulus might suffice to break it apart even now.

220 families among 1664 people give an average of over seven and a half souls per household in Zuñi. This is higher than elsewhere in the Pueblo region. The data of Fewkes, Mindeleff-Stephen, and Starr, in their works elsewhere referred to, furnish an average of barely five.

	Families or Houses	Population	Per House
Oraibi	149	7 50	5
Mishongnovi	53	289	5.4
Shipaulovi	22	105	4.8
Walpi	57	205	3.6
Sichumovi	24 ·	117	4.9
Hano	35	159	4.5
Cochiti	60	273	4.6

The greater size and congestion of Zuñi may have tended to a somewhat stronger tendency for a growing family to remain under one roof. But it would not be operative in the newer houses in the outskirts, which now hold over a third of the population, and would have but little influence in the eastern and more freely built half of the pueblo mass. The figures for the other towns are too uniformly smaller to allow the explanation to be dismissed that the basis of reckoning either of the natives or of enquirers has been different. The data at Hopi and Cochiti are based on prolonged and intimate acquaintance, or on an exact census, both of which a large population and a limited stay precluded at Zuñi.²

¹ Thirteenth U. S. Census, 1910. A count made for the Indian Office in 1916 is said to have yielded more than 1800 people.

² I first attempted, the same study on the basis of Mindeleff's plot of Zufii. My principal informant gave 171 families as compared with 191 families known to have lived within the pueblo and 139 still resident in it; a second, who proved far less reliable in detail and inclined to make obvious errors in identifying the map, listed 338. It was this enormous discrepancy that impressed me with the conviction that studies of this kind must be made on the spot and so far as possible for the present time, and that any attempt to secure accurate data as to the past distribution of population by means of a map, must be largely fruitless. It was this

I was at first inclined to believe that my informants had united a considerable number of adjacent families related in blood, and thus reduced the total and raised the average per household. But this error seems negligible; for my count is based on the compiled and corrected information of seven different informants, four of whom discussed maps 1 and 5, or 6 and 7—on which most Zuñi readily find their bearings—while the other three walked the streets and roofs with me. It is true that a Zuñi "house" often contains what we should regard as two or three households; but as long as it includes only one used hearth, and all natives insist that the two or three households are a single one, it is impossible to do anything but accept their reckoning.

The figures which I obtained in clan censuses, two of which are detailed ¹ while the third seems reliable, ² also corroborate closely.

	Houses	Inhabitants	Per House
All Zuñi	220	1664	7.56
Coyote clan	10	58	5.80
Tobacco clan	6	46	7.67
Badger clan	21	161	7.67

The average of about seven and one half persons per family, or half as many again as we reckon in civilized America, may therefore be accepted as substantially accurate for Zuñi of today.³

In any event, however, whether we have to deal with seven and a half or eight persons to the household as in Zuñi, or five as in the other pueblos and among ourselves, it is clear that the basis of the Pueblo family is substantially that of our own, and that the traditional formula so favored by ethnologists, of large, communal, matriarchal groups, is non-existent among these Indians.

KINSHIP IN THE CLAN.

It has already been stated that while the Zuñi apply kinship terms to all clan members, they distinguish clearly and promptly between blood kin and mere clan mates. A desideratum, not only at Zuñi, but among every

realization that led to the new survey on which the maps in the present paper are based. Mindeleff's plan looks tantalizingly like the outline of modern Zufi; but, as mentioned elsewhere, I had difficulty in finding a dozen walls that still stood precisely where they were when he made his survey in 1881. Before my first summer in Zufii was out, I had realized the extent to which rebuilding — voluntary and enforced — goes on in the course of a single season.

¹ Tables 7, 8.

rable 9.

³ It is more likely to be an underestimate than an excessive figure: actually only 191 houses are known in the old town of 1600 or more people; while, as remarked, the 220 houses occupied in 1916 may shelter 1800 souls.

nation that possesses clans, is a knowledge of the degree to which kin and clan groups coincide or fail to coincide. It is quite inconceivable that the great Pikchikwe clan, with four to five hundred members, should consist wholly of people in a single line of descent, or if so, that they should still be able to trace the ramifications of their relationship. A small clan might however well be thus knit together in blood; and to test the matter, I obtained a count of the members of the Coyote and Tobacco groups, who own ten and six houses respectively.

TABLE 7.
CENSUS OF COYOTE CLAN.

No.	House	Person and Status	No. 1 Addresses As	Fraternity
1	184	Philip		Makkyetlannakw
P	u u	father of 1; his o. brother		•
	1	owned the house		
2	u	mother of 1, ex old Coyote		Makkyetlannakw
		house 434, went to her hus-	•	-
	!	band's family		
3	u	y. sister of 1		Makkyetlannakw
Ba	u	husband of 3, ex 140 and 517e		
4	u	daughter of 3		
5	i "	daughter of 3, younger than 4		
6	ı u	daughter of 3, younger than 5		
7	. "	son of 3, younger than 6		
8	186	Emmalia (Emilia)	ikyinna	none
9	u	Charlie Pinto, o brother of 8	pappa	none
10	"	Robert, o. brother of 8		none
12	u	mother of 8, ex 373	tsitta	none
14	"	K'ucci or Louie, son of younger sister of 12	pappa	
15	u	Allapo'a, younger brother of 14		Shuma'kwe
16	. «	son of 8, boy	kyasse	•
17	u	baby daughter of 8		
P	u	husband of 8		
$\mathbf{T}\mathbf{k}$. "	husband of 12		
18	323	Nahtsi, young man	kyasse	none
19	u	mother of 18; ex 325	kyawwu	none •
20	; "	y. brother of 18		Shi'wanakwe
21	325	o. sister of 19		none
$\mathbf{T}\mathbf{k}$	u	husband of 21		
2 2	ı «	son of 21, not married		none
23	4	y. brother of 22, at school		none
24	u	y. brother of 23		1
25	u	y. sister of 24		1
44	u	mother of 21		
26	440	Lihkila	kyasse	none
P	u	wife of 26, lives in his house	1	!
P	, «	baby daughter of 26		i
27	u	y. brother of 26	1	none
28	u	mother of 26, widow of the	tsitta-ts'anna	Chikkyalikwe
		Pekkwinne who died in 1915		1
48	424	sister of 28, widow of P man	tsitta-Lacci*	Shi'wanakwe

^{*29} calls them by the same terms, although 48 is his mother's younger sister (properly his tsitta-ts'anna) and 49 her daughter (properly his kyawwu).

TABLE 7 -- (Continued).

No.	House	Person and Status	No. 1 Addresses As	Fraternity
49	424	daughter of 48	tsitta-ts'anna*	Shi'wanakwe
\mathbf{E}	4	husband of 49		
Ba	! 4	Na'ucti, husband of 48		
t	"	daughter of 48		
30	"	"Lazy," son of a sister of 48, widower		Makkyets'annakwe
34	454a	daughter of sister of 33	ikyinna	none
P	u	husband of 34	_	
35	4	Tsanatsahtits'a, daughter of 34, unmarried	kyasse	none
36		y. sister of 35		none
37	u	y. sister of 36	l 1	none
39	и	y. sister of 37		
38	"	y. brother of 39	I	
40	"	baby daughter of 38		
43	369	Uppekwinne, old man, blind	nanna	Uhhuhukwe ‡
42	"	y. sister of 43, old woman	hotta	none
†	u	y. sister of 42	1	none
t	4	o. brother of 42	I	
t	373	old woman; on her death her son, 13, sold the house to a Cn family	! 	
47	528b	· ·	kyasse	Peshatsillokwe
F	0200	husband of 47	, Kyasso	1 csnatsmokwe
F	u	daughter of sister of husband of 47	:	
51	580	Margaret A. Lewis, Cherokee wolf clan		none
	u	her husband, Governor Lewis, ex 333	i	none
52		Margaret, daughter of 51		
53	' u	Tci'pai'u, y. brother of 52		
54		Billy, y. brother of 53	1	ı
55	u	Robert, y. brother of 54	1	I
33	194	mother of 34; ex 454a; wife P	kyakkya	Makkyets'annakwe
50	196	Kyetits'a, o. brother of 8; ex 186; wife, Be		none
11	175 !	K'e'ni, y. brother of 8; ex 186; wife S	1	

^{*29} calls them by the same terms, although 48 is his mother's younger sister (properly his tsitta-ts'anna) and 49 her daughter (properly his kyawwu).

‡ Pekkwinne of his fraternity, whence his name.

No.	House	Person and Status	No. 1 Addresses As	Fralernity
32	120	Yakki, "nanna" of 29; ex 424; wife, M	nanna	none
t	104	Patchappa, y. br. of 32; ex 424; wife M		
29	3	Piwwanihka, son of a dead sister of 48; ex 424; wife, E	kyasse**	none
31	575	Pe'ussi, brother of 28; ex 440; wife E	kyakkya	Hallokwe
41	519	Nakya'ti, o. brother of 34; ex 454a; wife Cr	pappa	Peshatsillokwe
46	536	Wai'tiwa, o. brother of 19 and 47; ex 323; wife P	kyakkya	none
4 5	137	Mats'a, sister's son of 43; ex 369; wife Cr	pappa	Uhhuhukwe
13	167	Tsa'wela or Tsu'pila, ex 186, younger brother of 12; wife P	kyakkya	Sanniakyakwe and Apitlashiwanni ‡‡
	249	Family in 454a		

TABLE 7.— (Concluded).

^{** 1} calls the wife of 29 ikyinna. ‡ † Head bow priest.

In s	ummary	we :	have:	
------	--------	------	-------	--

House	Coyote Clan	Other Clans	Married Out
184	7	2	_
186	8	2	3
323	3	• —	1
325	6	1	
44 0	3	2	1
424	3	2	3
454a	7	1	2
369	2	_	1
538b	1	2	_
580	5	1	
	45	13	11

In other words, there are fifty-six members of the Coyote clan; and fifty-eight actual inmates of the ten Coyote houses in the town.

All attempts to connect even the bulk of these families into one or two groups of blood kindred, were fruitless. Outsiders denied relationship of most of the houses as explicitly as the Coyote informant. From the Zuñi point of view, the clan consists of the following kin groups:—

I. 184; ex 434

II. 186; ex 373

III. 323, 325, 538b; ex 325

IV. 440

V. 424

VI. 454a; ex 249

VII. 369

VIII. 580

As the ruin 434 adjoins house 440, I suspect a common origin; but my informants deny this. 424 is almost in contact, so that blood connection is not unlikely. This might make one original group.

373, from which 186 issued, is just across the street from 323-325, and both are at the eastern edge of the town; while 369 is only a few doors distant, on the street which separates them. Again one is tempted to go behind the returns and suspect an outgrowth from a single stem.

454a, out of 249, seems to stand alone. This house furnishes an example of the caution which must be exercised in inferring original kinship from nearness of houses. 454a is only a short distance from 184, which in turn is almost adjacent to 186. Yet the three families come respectively out of the southern, the southeastern, and the northeastern blocks. What has happened in recent years, is likely, in only little less measure, to have happened fifty, a hundred, or two hundred years ago.

580 also illustrates the complexity of strains in even small clans. The civilized and educated woman who is married to the present governor of Zuñi, is, through her mother, of the Cherokee wolf clan. As a member of the community, it was taken for granted by the Zuñi that she must be a member of one of their clans — obviously the Coyote. In a generation or two there will scarcely be even a consciousness, among the Zuñi at large, that that part of the clan which her progeny constitutes, is of alien origin. The same thing must have occurred time and again, generations and centuries ago, through women of Hopi, Acoma, Laguna, Navaho, and more distant tribes settling among the Zuñi. Such events may have been rare. But now and then a famine, or the suspicion of witchcraft at home, would drive an individual, a family, or a group of households, to a distant pueblo. Girl captives were kept occasionally, or bought from the Navaho or Apache: and sometimes a woman would follow a visiting lover back to his home.

At best then, we can speculatively reduce the ten families that comprise the Zuñi Coyote clan to four lineages; the truth perhaps lies between this number and the eight groups that the natives recognize. Two things are evident. First, the Zuñi do not ordinarily carry relationship back very far, even within the clan. And second, clan and kin are distinct things, one rather lightly superimposed on the other.

TABLE 8.

Census of Tobacco Clan.

No.	House	Persons and Status	Fraternity
2	72	female parallel cousin of 13, also of a P father	none
3	u	older brother of 2	Makkyetlannakwe
4	"	older brother of 2	none
Tk	"	husband of 2	[Makkyetlannakwe]
Cn	"	husband of dead sister of mother of 2	[Makkyetlannakwe medicine head]
S	u	daughter of 3, whose S wife married into his house, but left him	-
11	557	grandmother of 12, 13, 14, 15; ex 72	none
13	. "	daughter's daughter of 11, daughter of the (P) pekkwinne who died in 1915; ex 72	none
14	"	younger sister of 13	none
15	ű	younger brother of 14, unmarried	
Cr?	u	husband of 13	[none]
P	" "	husband of 14	[none]
22	, "	boy, son of 13	
23	, u	boy, son of 14	
12	561	older sister of 13, 14, 15; ex 557	Makkyetlannakwe
P	· "	husband of 12	[none]
19	. "	girl, daughter of 12	
20	"	boy, son of 12	
21	u	girl, daughter of 12	1
17	· "	Notatsa, son of 11 by P father, kyakkya of	[none]
18	"	12, 13, 14, 15 Jo, older brother of 17, kyakkya-Lacci of 12, 13, 14, 15	Shuma'kwe
5	"	Te'les; had Ba father; sister of 34; ex 223	none
6	"	daughter of 5, by M father	Makkyets'annakwe
7	u	daughter of 5	Makkyets'annakwe
8	u	son of 5, unmarried	none
${f E}$	u	husband of 6	[none]
Cn	u	husband of 7	[none]
9	u	boy, son of 6	
10	"	boy, son of 7	İ
34	549a	sister of 5, ex 223	none
35	u	daughter of 34	none
36	"	daughter of 34	Shi'wanakwe
P	и	husband of 34	[none]
37	· u	older brother of 34	Shi'wanakwe
38		older brother — pappa-Lacci — of 34 and 37	winne of Lewwek
24	558	woman; S father; ex 223, but from separate room in rear	none

TABLE 8— (Concluded).

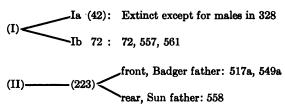
No.	House	Persons and States	Fraternity
25	558	daughter of 24	none
26	"	younger sister of 24	none
27	"	daughter of 26	Hallokwe
28	u	daughter of 23	none
29	u	son of 24	Hallokwe
30	u	son of 24	none
\mathbf{E}	ш	husband of 24	[none]
Cn	"	husband of 25	[Makkyetlannakwe]
Cn	"	husband of 27	[none]
31	"	boy, son of 27	
1	328	Kyallatsillo, P father; originally ex 42, which now belongs to 72; his people seem to have moved to 328, or to a former Tb house adjoining 328 on the west; his P wife married into his house	
39	"	Pa'tela; kyasse of 1; his mother's mother and the mother of 1 were sisters. An associate shiwwanni	none
16	526a	Tomasito, older brother of 12, 13, 14, 15, ex 72; married in Tk house	none
32	164	Tcuyati, younger brother of 24, ex 223 rear; married in P house	Makkyets'annakwe
33	292	Kuyahti, older brother of 24, ex 223 rear; married in P house	Hallokwe head
40	534e	Annie, daughter of 24, married in her husband's P house	none [husband Hal- lokwe]
41	534e	boy, son of 40	_
42	534e	girl, daughter of 40	

This clan summarizes as follows: —

House	Tobacco Clan	Other Clans	Total
72	3	3	6
517a	6	2	8
561	6	1	7
557	6	2	8
558	8	3	11
549a	5	1	6
	-	_	
	34	12	46
In 328 or married out	. 8		
	-		
Total Tobacco people	42		

It is possible that a few Tobacco men married into other houses have been overlooked; but there are not likely to be many, since twenty-two of the known forty-two clan members are males.

This clan reduces to fewer blood lineages than the last, even allowing for its smaller size. All its members trace back to the three Tobacco houses recognized in the old town; and as two of these are adjacent, we are almost certainly justified in connecting them and reducing the lineages to two.



Both this clan and the last are below the average of Zuñi clans in size; but as Zuñi is by far the largest of all modern pueblos, they approximate clans of normal or superior strength in other towns.

The known marriages contracted by living and former members of the two clans aggregate thus:—

	Coyote	Tobacco
Pikchikwe	7	11
Eagle	3	2
Badger	2	1
Sun	1	2
Turkey	2	2.
Corn		4
Crane	3	1
Frog	1	
Tansy Mustard	2	1
Bear	1	
	22	24

This is about as might be expected, except for the excess of Pikchikwe marriages. The proclivity of Tobacco people to contract marriages with this clan, even when they themselves are paternally connected with it, has already been commented on.

I add also a summary of the Badger clan, for such value as it may have in populational considerations, although the list of members was not taken in sufficient detail to bear on the question of the kin groups involved. It will be seen that the number of persons of other clans married into Badger houses is exactly the same as that of Badger people married out of their natal homes; which is of course as it should be, normally.

TABLE 9.

THE BADGER CLAN.

Block	House Number	Badger Inmates	Other Inmates	Former Badger Inmates Married Out		
(77	7	1	4		
	52	5	1	1		
36.5.	25	6	1	_		
Main {	94	2		6		
	95	6	_			
U	106	1	_	3		
ſ	206	13	1	3		
Southwest {	214	4	4	1		
l	226	4 .	1	_		
South {	247	10	3	1		
South	252	9	2	_		
(387	13	4	3		
	378	5	1	4		
Southeast {	384	5	1	2		
	394	2	4	2		
l	442	8	3	_		
(517e	6	2	2		
	534c	4	1	<u> </u>		
Outside {	537b	8	2	_		
}	538a	3	2	3		
l	555a	4 .	2	1		
		125	36	36		
Once Ba, now P	68	2	6	_		
		127	42	36		

CLAN HEADS.

The Zuñi as invariably denied to me that there were any authoritative or nominal heads of clans as they rejected the idea of a council or other machinery for the transaction of clan business; and however indirectly I approached the subject, its prosecution remained fruitless. There is only one exception. In counting the Badger clan people, as just listed, I learned that while there was no mossonna or mossiye, that is, head, for the clan, the people of house 247 were known as tonnashikwe ashi'i or ashi'ye,

"badger people name having" or "badger people named." A little girl in this house was customarily referred to throughout the pueblo as tonnashikwe ts'anna, "the little badger person." Further inquiry elicited corresponding houses for most of the clans; as follows:—

Pikchikwe	house 454
Eagle	· 506
Badger	247
Sun	518
Turkey	398
Corn	38
Crane	286, ex 333
Frog	181
Coyote	369
Tansy Mustard	120
Tobacco	558, ex 223
Bear	534, ex 33
Deer	81

In discussing the matter, my informants came gradually to use the word mossive as well as ashi'i, but apparently applied it in a figurative sense, much as we might speak of a social leader; since they refused to admit any privilege possessed by the families in question. As the governor, who was one of my authorities, has relatives in two of the houses named, 286 and 81, he would have been certain to be aware of any rights or specific honors due to the inhabitants of these houses. The only explanation given for the designations was that they were names, applied without definite reason other than perhaps in a half jocular spirit, or the convenience of a generic epithet over the enumerating of personal names. I am inclined to see in the practice an additional manifestation of the same tendency that causes the teknonymic substitution of kinship terms for actual individual appellations whenever possible.

It is also clear that a number of the clan named houses are those which contain the clan fetishes, as listed in table 12. This applies to Eagle, Turkey, Corn, Crane, and Deer. It is not so however, at least for the present time, for Pikchikwe, Sun, Frog, Coyote, and Tansy Mustard.

THE PUEBLO CLAN SYSTEM.

At first sight, the clans represented at Zuñi seem to be largely different from those of the Hopi, or of the nearest people on the other side, the Keres of Acoma and Laguna. The foremost Zuñi clan, the Dogwood, is without direct parallel in any pueblo. Important Hopi clans or clan groups, such

as the Snake, Horn, Flute, Squash, Raincloud, Lizard, Sand, Kachina, and Reed, are unrepresented at Zuñi; while on the Rio Grande, there are Mountain-lion, Pine, Cottonwood, Fire, Hawk, Ant, Buffalo, Calabash, Oak, Moon, Turquoise, and other clans that sound strange to one familiar with Zuñi conditions.

Nevertheless, the discrepancies are superficial, and mainly due to a peculiar native method of nomenclature. Once this has been penetrated, it becomes clear that in essentials a single system of clan organization pervades all of the pueblos, from Oraibi to Taos.

SCHEME.

The key is to be found in Dr. Fewkes's "Tusayan Migration Traditions," supplemented by the valuable A. M. Stephen material compiled by Cosmos Mindeleff.² Both these authors classify the Hopi gentile groups into phratries and clans, and even super-phratries or sub-clans; and the two full ; lists prove to connect nearly every recorded Zuñi, Keres, and Tanoan clan. not only with the Hopi system but among each other. The Hopi themselves are indirectly responsible for the fact that these interconnections of a single system have been overlooked. In their minds, their clan classification seems to be thoroughly interwoven with origin and migration legends. It is the latter element that has particularly appealed to the ethnologists who gathered Hopi clan data, with the result that the eagerness to explain origins has led them to stress every possible fragment of evidence bearing on what the Hopi social system might have been a few centuries ago, at the expense of overlooking its essential features today and its obvious connections with other Pueblo organizations. Not all students of the Southwest have accepted these historic or pseudo-historic interpretations. Some in fact have viewed them with hostile bias. But their promulgation raised an issue around which opinion, whether published or withheld, seems to have crystallized, to the disregard, for many years, of nearly all interpretations of the existing conditions. There is in this case a remarkable exemplification of the fatal check to knowledge invariably dealt to studies in the field of civilization when the temptation of seeking specific origins is yielded to and the path of merely but deeply understanding phenomena is abandoned. This is the key provided by Dr. Fewkes: 8 —



v .

¹ Ann. Rep. Bur. Am. Ethn., xix. 577-633, 1900.

² Ibid., x1x, 639-653, 1900; v111, 16-41, 1891.

³ Pp. 582-584.

- A. Hopi Clans from the North.
 - Tcua or Snake group: Snake, Puma, Dove, Cactus, Opuntia Cactus, Nabovu. Stephen ¹ adds another variety of Cactus, Marmot, Skunk, Raccoon.
 - Ala or Horn clans of the Ala-Leñya group: Horn, Deer, Antelope, Tcaizra. "The Ant clans (Anu, Tokoanu, Wukoanu, and Ciwanu) belong to this group, but the author is in doubt whether to assign them to the Ala or the Leñya division." Stephen adds Mountain Sheep.
- B. Hopi Clans from the South.
 - Patuñ or Squash group: Squash, Crane, Pigeon-hawk, Sorrow-making.
 - Leñya or Flute clans of the Ala-Leñya group: Blue-flute, Drab-flute, Flute, Mountain Sheep.
 - Patki or Raincloud group: Raincloud, Maize, Rainbow, Lightning, Agave,²
 Bigelovia, Aquatic Animal, Frog, Tadpole. Stephen adds Rain, Bean,
 Watermelon, and, elsewhere, Snow.²
 - Tūwa-Kūkūtc or Sand-Lizard group: Sand, Lizard, Flower or Bush. Stephen adds three further species of lizards, White Sand, and Mud.
 - Tabo-Piba or Rabbit-Tobacco group: Rabbit, Hare, Tobacco. Stephen adds Pipe.
- C. Hopi Clans from the East.
 - Honau or Bear group: Bear, Wildcat, Bluebird, Spider. Stephen adds Fir and elsewhere Rope.4
 - Asa or Tansy-Mustard or Tcakwaina group: Tcakwaina (a Katcina),⁵ Roadrunner or Pheasant, Magpie, Bunting. Stephen adds Throwing Stick, Field Mouse, and Oak, and gives Chaparral Cock as alternative of Roadrunner.
 - Katcina or Masked Dancer group: Katcina, Crow, Parrot, Yellow Bird, Spruce, Cottonwood.
 - Kokop or Firewood group: Firewood, Coyote, Wolf, Yellow Fox, Gray Fox, Zrohono, Death God, Eotote, Piñon, Juniper, Bow, Tüvatci Bird, Sikyatci Bird.
 - Pakab or Reed group: Reed or Arrow, Eagle, Hawk, Turkey, Sun, Püükoñ War God, Palaña War God, Cohu. Stephen adds Chicken Hawk, Willow, Greasewood.
 - Honani or Badger group: Badger, Porcupine, Buzzard, Butterfly, Katcina (sic).

 Stephen adds Evening Primrose and Medicine, and elsewhere replaces Butterfly by Moth.⁷
 - The Owl and Bat or Batkin clans of Stephen 8 are not placed in any group.

Dr. Fewkes never mentions most of these "clans" again, and his personal census of Walpi and Sichumovi in the same essay is substantially on the basis of the clan groups or "phratries." It is plain why this is so: 78

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¹ Pp. 38-39.

Perhaps the "Mescal Cake" of ibid., xix, 651.

^{*} Ibid.

⁴ Ibid.

Chakkwena is a masked impersonator at Zuñi.

[•] Sikyatci is also given for Yellow Bird in the Katcina group.

⁷ xix. 651.

^{*} Ibid.

clans among the 322 people of two towns would be an absurdity. The number of souls per clan would be less than we reckon per household. In the same way, Stephen in his earlier classification 1 lists 57 clans, which do not exhaust the number; 2 but the subsequent tabulation 3 of the families or houses of five of the six Hopi towns refers to only 34. How these discrepancies, which are so obviously full of some kind of meaning, came to be passed over as trivial, appears from a statement by Mindeleff: 4—

The table does not show the condition of these organizations in the present community but as they appear in the traditional accounts of their coming to Tusayan, although representatives of most of them can still be found in the various villages.

In other words, how a society is organized today was of little interest or moment compared with what its organization may have been a thousand years ago; and the facts at hand were neglected in favor of speculation on those beyond reach.

TABLE 10.5

System of Pueblo Clans.1

(* Extinct)

	Generic	Норі	Zuñi	Keres	Tanoan
1.	a. Rattlesnake Rattlesnake ^{1a} Cactus		*Rattlesnake	Rattlesnake	
	b. Panther			Dove Panther	Panther
	a. Deer	Horn	Deer	Deer *Elk	Deer
2.	b. Antelope	Flute Red Ant	(Antelope)	Antelope Ant Buffalo ³	Antelope Ant Buffalo ³
	a. Squash	Squash	(Squash)4	Gourd ³	Gourd ³
3.	b. Crane	Crane	Crane	Crane Duck³	Goose ³

¹ VIII. 38-39.

^{* &}quot;For example, in 'corn' can be found families claiming to be of the root, stem, leaf, ear, blossom, etc., all belonging to corn."

^{*} xix, 651.

⁴ viii. 38.

See pp. 139 and 140 for footnotes in Table 10.

TABLE 10—(Continued).

	Generic	Норі	Zuñi .	Keres	Tanoan		
i. {	a. Cloud	Cloud Snow	Water ⁶ Frog Sky ³	*Cloud Water Frog Sky ³	Cloud Water		
1	b. Corn ⁶	Corn Bigelovia Agave-Mescal	Corn	Corn	Corn		
j. \	a. Lizard	Lizard		Lizard	Lizard		
	b. Earth	Earth ⁷	. 	Earth	Earth		
	a. Rabbit	Rabbit	*Rabbit				
	b. Tobacco Tobacco		Tobacco	Tobacco	Tobacco		
7. {	a. Tansy- Mustard	Tansy-Mustard	Tansy-Mustard	Oak	Oak		
` `	b. Chaparral Cock		Chaparral Cock	Chaparral Cock	1		
3. {	Kachina a Raven b Macaw c Pine	Kachina-Crow Macaw	Dogwood 8 Raven-Crow Macaw	Kachina 9 Crow Macaw	Crow Macaw Pine-		
d Cottonwood		10		Cottonwood "Mexican Sage" 11	Spruce Cotton wood		
-	a. Firewood	Firewood ¹² Owl ¹³	*Wood	Fire	Fire-Fire wood		
9 . {	b. Coyote Coyote Bow		Coyote	Piñon Coyote ¹⁴	Coyote Wolf		
	a. Arrow	Arrow ¹⁵	1	*Arrow			
10.	b. Sun	Sun	Sun	Sun *Moon³	Willow Sun Moon ^a		
	c. Eagle	Eagle	Eagle	Eagle	Eagle		
	d. Turkey	Hawk	Turkey	Turkey- *Hawk	*Turkey- Hawk		

TABLE 10 — (Concluded).

	Generic	Норі	Zuñi	Keres	Tanoan
11.	a. Badger	Badger Moth- Butterfly	Badger ¹⁶	Badger	Badger
	b. Bear ¹⁷	Bear Spider	Bear	Bear	Bear
		Rope			Bluebird
12.	a. Turquoise ¹⁸	19		Turquoise	Turquoise
12.	b. Shell- Coral	19		Shell-Coral	Shell-Coral
	Unplaced:	Bat	Yellow Wood	*Stone "Ivy" Salt Sage	Stone Grass
			1 1 1	And a few of doubtful au reported from	•

- ¹ It must be borne in mind that this table includes only clans listed by some authority as actually occurring, under the names in question, in some pueblo of each group. The principal source is F, W. Hodge's valuable table of Pueblo Indian clans in American Anthropologist, old series, 1x, 345–352, 1896. The Hopi synonyms have been used to identify clans that appear dissimilar in the several localities; but have not themselves been inserted, except when specifically mentioned in one of the Hopi censuses. There are Dove and Panther clans in Keresan towns: at Hopi only Rattlesnake and Cactus are listed, with Dove and Panther as synonyms or sub-clans. All the identifications rest upon definite data of this sort, with the exception of a few rather obvious connections, which are mentioned in the notes as being conjectural.
 - 18 The word means "rattlesnake" in Hopi and other Shoshonean dialects.
- ² The town at Zufii before 1680 was called "ant-place;" in fact the modern town is still sometimes so referred to; and there is an ant fraternity.
- ² The placing of the Buffalo, Gourd or Calabash, Duck-Goose, Sky, and Moon clans in the table rests upon tentative guesses by the author, and not upon any known native classification.
 - 4 Represented by a Crane clan subdivision, Mokyissikwe, a tapering striped pumpkin.
- Mentioned by Cushing as extinct. I was told of the Miky'annakwe or Corn-ear Water people as a sub-clan of Corn.
 - With subdivisions as to color which have been disregarded here.
- ' Fewkes and Mindeleff both give "sand." but comparative vocabularies show the word to have the more generic meaning of "earth" also.
- The Kyakkwemossi or highest priest, and the Pekkwinne or "speaker" for the sun, the two ranking officials in the Ko-tikkyanne or god-fraternity of Zuñi, the basic tribal religious organization corresponding to the Hopi Kachina society, "which includes all males"

The fundamental inference from the presentation of the available knowledge as arranged in Table 10 is that a single, precise scheme pervades the clan organization of all the Pueblos. It is almost as if one complete pattern had been stamped upon the social life of every community in the area. I should never have suspected such an exact formulation to be inherent in the seemingly endlessly discordant data; and it appears that Mr. Hodge, Dr. Fewkes, and other investigators who have contributed most to the subject, have been equally without realization of the degree of coördination that prevails through the Pueblo region.

To mention only one example, the scheme of Cochiti gentile organization, which we know accurately from Starr's census, agrees remarkably with the Zuñi one. If "extinct" clans are included, the same clan-pairs are

(Fewkes, xix, 623, 1900) must be Dogwood. At least this is required for the Pekkwinne; the Kyakkwemossi may be of another clan provided his father was Dogwood. The Zuñi know the word Kachina but consider it Mexican and never employ it among themselves. The native equivalent is Kokko, stem ko-, which means god, impersonator of a god, or mask.— This fragment of ritualistic law would be sufficient to connect the Zuñi Dogwood clan with the Hopi Kachina "phratry" even without the complete identification given by the Zuñi Raven and Macaw subdivisions and the Hopi Crow and Parrot synonyms; not to mention that the Zuñi "Kokkokwe" subdivision probably means "god-people" or "Kachina-people" rather than "raven-people."

- "Dance kilt."
- ¹⁰ Represented in the Hopi region among the Tanoan Hano, but not among the Hopi themselves.
- ¹¹ Hodge: Cochiti, "Washpa, Dance-kilt"; Starr, Proc. Davenport Acad. Sc., vii., 42, 1899, "Huashpa, Mexican Sage." This raises the conjecture whether Sage, and possibly "Ivy," may not also go into the Kachina group.
- ¹² The words for "fire" and "wood" are from the same stem ko- or ku- in nearly all Shoshonean languages.
- ¹³ Bur. Am. Ethn., Ann. Rep., viii, 105, 1891; "Kokop, Burrowing Owl." Ibid., xix, 584, 1900; "Kokop, Firewood." The latter is the correct translation.
- ¹⁴ John G. Bourke gives an instance that is probably characteristic of the Pueblo point of view as to clan identifications. "There were found representatives of two distinct Coyote gentes: a husband, who called himself a Coyote del Sol, and his wife, who was a Coyote del Chamisa (Sage Brush), the Coyote Clan of the rulned pueblo of Cicuye, or Pecos, amalgamated with Jemez, and so called for distinction." Journ. Am. Folk-Lore, III, 117, 1890.
- 15 Fewkes and Mindeleff usually: "reed." The native word means "reed," "cane," or "arrow" in a number of Shoshonean dialects, as co'le does in Zufii. Stephen associates the Reed clan with Cloud-Corn-Lizard-Tobacco instead of Sun-Eagle: xix, 651.
- 16 Pettsikowakwe, Bent Over Straw, and Huhtetcikwe, a plant resembling a sunflower, synonyms of a Zuñi Badger sub-clan, may lead to new inclusions in the Badger-Bear group. Compare Stephen's Hopi Evening Primrose and Medicine.
- 17 The fact that Bear and Badger were the only clans found in all four Pueblo groups without being coupled with other widespread clans led me to believe that they might form a pair, even though none of the Hopi sources associate them. Dr. R. H. Lowie informs me that his Walpi-Sichumovi informants in 1915 regarded Grizzly Bear and Butterfly as synonyms of one clan. This establishes the suspected coupling, since Butterfly also identifies with Badger.
- ¹⁸ Somehow it is difficult to refrain from the conviction that the Turquoise-Shell group will identify with the Kachina complex, though there is nothing specific in favor of such a view. There is not even any direct evidence to justify the coupling of Turquoise with Shell-Coral.
 - 18 Extinct among the Hano, and not reported from the Hopi.

represented and unrepresented, except for Turquoise-Shell and Rabbit-Tobacco.

Zu ni	Cochiti
$\left\{ \begin{array}{l} {}^{\bullet}\mathbf{Rattlesnake} \\ \end{array} \right.$	*Rattlesnake *Panther
{ Deer { Antelope	$\left\{ \begin{array}{l} {^{*}\rm{Elk}} \\ {^{*}\rm{Antelope}} \end{array} \right.$
{ Crane	$\left\{\begin{array}{l} \textbf{Gourd} \\ \end{array}\right.$
Frog¹ Corn	Water Corn
{	{
Rabbit Tobacco	{
Tansy-Mustard Chaparral Cock	Scrub-oak
{ Dogwood	Kachina-Mexican Sage Cottonwood
{ *Wood Coyote	{ *Fire-Firewood Coyote
Sun Eagle Turkey	Sun *Eagle *Turkey
$\left\{ \begin{array}{l} \mathbf{Badger} \\ \mathbf{Bear} \end{array} \right.$	$\left\{ *\mathbf{Bear} \right.$
{	$\left\{egin{array}{l} \mathbf{Turquoise} \end{array} ight.$
Yellow-wood	Ivy Sage

HISTORICAL INFERENCES.

A conclusion that cannot be avoided is that the quasi-historical deductions of Stephen, Fewkes, and Cosmos Mindeleff, as to the origin of Hopi clans and towns, fall to the ground. It is inconceivable that the elements

¹ Bourke in his list of Zuñi gentes gives "Water" in place of "Frog." Journ. Am. Folk-Lore, III, 116, 1890.

of population represented in the modern Rattlesnake and Horn clans should have come to the Hopi from the Paiute in the north, or those in the Squash-Crane and Corn-Cloud groups from the Pima in the south, when all these clans are equally and similarly represented in the Rio Grande pueblos, which are supposed to have furnished only the Bear, Badger, Coyote, Eagle, Kachina, and related elements.

These pseudo-histories of course are theoretically assailable on the ground that they posit a former social condition utterly unlike that obtaining today among the Hopi or Pueblos in general or any neighboring tribes. The whole nature of the existing clans among the Indians of the Southwest is that of a part in a whole, an organ in a body. The native legends that the world has been asked to accept as authentic and to weave into its fabric of universal history, depict the Hopi clans as once communities in themselves. All the Snake people lived together, all the Corn people in another place, and the one community was all Snake and the other all Corn without exogamic divisions corresponding to clans. In other words, each organ was once a body maintaining an independent existence with self sufficient functions; and the present unitary body is an agglomeration of such former separate bodies, which somehow have sunk to be merely organs.

The formula of thought which is involved in such a concept, is one that has been applied in ethnology a thousand times. First, according to this formula, there was a status radically different from the known one, but substantially stable. Then came a period of change, the mechanism of which is either ignored or also taken for granted. And finally the present condition of conservative equilibrium is reached, the forces working for alteration ceasing as obediently as their operation commenced mysteriously. This method of reasoning must contain an extraordinary power of fascination, or it would not have been attempted so often. It is difficult to decide whether the prevalence of such arguments is due rather to the misapplication, to civilizational facts, of mental processes justified in other fields of science by their success; or to an essentially naïve way of thinking. certain, however, that in all cases in which we have actual knowledge of changes in civilization, these changes do not take place in this manner; so that the formula may fairly be described as incompatible with a historical or social point of view.

POLARITY.

A characteristic and remarkable feature that runs right through the Pueblo clan system is the grouping of clans in pairs, or perhaps a tendency toward polarity within what is really one clan. This is very prominent among the Hopi, and confirmed by the Zuñi Raven-Macaw and Deer-

Antelope groups, as well as by the Zuñi tendency to recognize only pairs or fours of sub-clans, however nominal these may be. It is not directly established for the Keresan and Tanoan communities, but appears probable from the fact that the same pairs frequently recur as among the Hopi and Zuñi. This point seems a most fruitful one for investigation in the social life of the Rio Grande communities; but it must be pointed out that it is scarcely soluble without detailed data that involve the relation of individuals to the groups.

It is possible that this clan polarity is the basis of such moiety organization as exists among the Pueblos, and certain that the two phenomena are sufficiently similar to be fully understood only in connection with each other. It is strange that there has been no allusion to moieties among the Hopi, and no indication of their existence with the Zuñi except in mythology, while among the Keres and Tano modern authorities picture them as entering deeply into the life of the people. Several explanations of this discrepancy are possible. The special stimulus to which the Rio Grande pueblos were subjected by the enormously greater influence of the Spaniards upon them, has certainly been a factor of some sort. It may have caused a decadence of the clan and a corresponding exaltation of the moiety as an institution at the expense of the clan. But in this event the problem becomes what the native basis of this moiety development may have been. It is possible that moieties with political and ritualistic functions already existed on the Rio Grande without an equivalent importance at Zuñi and among the Hopi, and that the Tanoan and Keresan communities merely magnified an institution that they already possessed. It is theoretically conceivable that they had moieties with exogamic functions, though this is rendered very unlikely by the absence of any evidence of exogamic moieties among the Keresan people of Cochiti twenty years ago, as already discussed. It is also possible that the Rio Grande communities merely took over the idea of polarity from their clans, and extended it, from causes that are obscure but with which the presence of the Spaniard might be connected, to their towns. It does not appear that a present answer can be given to these questions; but they do not seem insoluble.

The nature of the symbolism involved in the clan duality or polarity is interesting, but no single consistent principle has yet become apparent. Rattlesnake and Panther, for instance, are both dangerous biting animals, and Cactus may be connected with them because its spine resembles a snake's tooth; but the association with these of Dove is obscure. Badger and Bear are similar animals, but it is not clear why Butterfly and Spider and Bluebird should be connected with them, although the linking of Rope with Spider is symbolically intelligible. Deer, Antelope, and the other horned animals form a natural group. The connection between Cloud or



Water and Corn is of course also fundamental in all aspects of Southwestern life. Squash and Crane may be a variant of the same association: the water bird is connected with an agricultural product. Even Lizard and Earth may possibly have an element in common, in the opposite idea of dryness. But what concept lies at the bottom of the linking of Rabbit with Tobacco, of Firewood with Coyote, of Ant with Deer-Antelope, and of a number of other groups, is as yet a complete mystery, whose elucidation will shed light on Pueblo esoteric thinking as well as social organization.

The opportunity to question an old Hopi who has been married at Zuñi since before Cushing's time, or about forty years, allowed me to put to a partial test the foregoing Pueblo clan system. The outcome shows considerable deviation from my reconstructed scheme; but it also evidences tolerable agreements, besides establishing two points: first, that the Pueblo Indians take for granted the identity of each other's clans; and second, that polarity is a distinctive trait of the Hopi concept of clans, while more foreign to the Zuñi mind.

My informant began by insisting that Hopi and Zuñi clans were identical. In substantiation, he gave a list of fourteen Hopi equivalents. Yellow Wood having been omitted by him, he replied to a question that this clan was not Hopi. This accords with its position in the foregoing theoretical table. Asked as to Hopi clans unknown to the Zuñi, he mentioned a few, but equated each with a clan already cited by him. He then affirmed that each Hopi clan had two names, but was a single body; and completed his second list on this basis of pure synonymy. These are his data in full, and in the order of mention:

Zuñi First Hopi Name		Second Hopi Name
Badger	Honaní	Ngahü or Ngayahü, roots dug by the badger
Sun	Tawa	Paho, prayer plume
Eagle	Kwa	Kotika, its nest
Pikchikwe	Pakap (reed)	Kyaji, macaw
Crane	Akok	(none)
Coyote	Isi	Mahsawü, ghost [Zuñi: happa]
Corn	Paki	O'omahtü, "rain"
Turkey	Kuyungu	Paho, prayer plume, because its feathers are used for these objects
Bear	Hon	Chüshi, bluebird
Frog	Pati	Patüpha, "rain"
Tobacco	Pipa	Tap, cottontail rabbit
Chaparral Cock	Hospo	Natekiyünga, "hides quickly, invisible"
Tansy Mustard	Asa	Astekükpü, "dried remains in a dish" [Zuñi: he'letonne]
Deer, Antelope	Ala	Tsüpü, antelope

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All the above first names were given with the suffix -nyamü, which appears to be equivalent to Zuñi -kwe, "people." When asked the meaning of wingwü, the informant equated it with Zuñi annota, "clan"; but he did not employ the term.

I have little hesitation in predicting the identifications of Pakap, reed, with Pikchikwe, and possibly others, to be erroneous even from the native point of view. But the equation of Bear and Bluebird, and of Tobacco and Rabbit, is in accord with previous data; and the occurrence of Paho as a second name for both Sun and Turkey, corroborates the connection of these two clans in a most satisfying manner. At any rate, rough as these data are, they give some measure of support to the generic contentions here advanced; and above all, indicate the rich though complicated results that await the prosecution of comparative field studies among the Southwestern tribes.¹

¹ Though without direct bearing on the matter in hand, and probably far from errorless. I add the following religious equations by the same informant and a few made by an old Zuñi who had lived at Laguna.

Zuñi	Hopi	Laguna
Fraternities		-
Ne'wekwe	Tatawa-kyamü	Kacaili ·
Lewwekwe	Nacotańwi-kyamu	[exists, name forgotten]
K'ocikwe	Icüwiwim-kyamü	I'pani is similar
[Me'ululu, nearly like Makkyets'annakwe]	Wüwütcim-tü	•
	A'al-tü [sic]	
[Payatamu tikkyanne]	Lelen-tü	
	Kwa'kwan-tü	
[Rattlesnake, not Zufii]	Tcüwüwim-kyamü, Tcü'tcü-tü	
Apiraciwwanni	-	U'pi
	Yaya'wiwiñ-kyamü, jugglers who leaped from high places and were restored to life	-
	Mamejoh-tü, women	
	Lalekon-tü, women	
	U'wakuc-tu, women	
Makkyelannakwe		Hakani
Sanniakyakwe		Cuhuna
(''Suskikwe'')		<i>,</i>
Ci'wanakwe		Ciwana, Kwilaina
Uhhuhukwe		
Tcikkyalikwe		
[Knife, not Zuñi]		Hictianni
Sayapa masks in		Sayapa, extinct
Cuma'kwe		
) ficials		
Ciwwanni	Momüwitc	Tsa'tauhu'tcani
Pekkwinne	Tca'akimüngvi	
Masked Gods		
Koyyemshi	Tatataktcü-mü	Kummayawici .
Ca'lako	Ca'lako	
Pa'utiwa	Pa'utiwa	
Kyaklu	Eototo	

ORIGIN AND MEANING.

It is important to guard against the assumption that the Pueblo clan system originated in its present form of a complete whole, and has survived unchanged since ancient times except for attrition and decay in spots. Such may be the fact. But it is also possible that the various correlated clans were once utterly unconnected, and have only gradually been coördinated. There may even once have been a separate and diverse system for each of the four stocks, the never ceasing intercourse between them bringing with the lapse of time a purely arbitrary interrelation and assimilation. Snake and Panther may be clans that were always one, or always two moieties of a unit. Or, it is conceivable that the Snake clan is an old product of the western pueblos and the Panther of the eastern, and that they have been only artificially equivalated by the natives on the assumption that all Pueblo communities must follow the same plan, however different their nomenclature — much as the Romans and Greeks made the entirely unhistorical identification of Odin with Mercury and of Ptah with Hephaistos on the ground that the gods of other nations must at bottom be the same as their own. It is idle to speculate upon these possibilities between which only investigation upon the spot can ultimately decide. What is clear is that there is in the Pueblo mind, and evidently has been for centuries past, a concept of a definite and characteristic scheme of clan organization which is not Hopi or Zuñi or Tewa but common Pueblo.

It is not impossible that when the present imperfect and partly tentative system has been more fully worked out, a grouping may develop in which the total number of clans or clan pairs is significant. The twenty-eight clans

Sayatacca	Sayatacca		
Sayau'a	Wükükwat		Tci'tsinuka
Hehhe'a	Hehhe'a		He'hemi
Yamuhakto	Yamuhakto		
Salimopiya	Hühya		
Wotemia			Kaya'a
Ky'annakwe			Tuluka
Atocle			Kuyautsa
Cumaikoli	Cumaikoli		Cumaikoli, a former fraternity whose masks are now in
		•	Zuñi
Hemucikwe			Hemuci
Tcakkwena			Tcakkwena
			Hematatsi
Various			
Kokko, masked dancer	Katcina		Kā'tsina
Tikkyanne, fraternity	(-wifi-kyamü)		Tcayāni
Ko-tikkyanne			Kā'tsina tcayāni
Kiwwitsinne			Kā'tsina katcuti (house)

that are now apparent may reduce to twice six pairs, or increase to four times four double clans. Of course, the more perfect any such system, the less likely is it to have had actual existence in history, and Cushing's work reveals the danger of merging the real in the esoteric. But, as just pointed out, we do not yet know whether the system as such ever had much substance or was always a schematic device. The problem of the historicity of the system is a distinct one from that of the essential nature of the system; and in the main a subsequent problem.¹

There are some indications already of a grouping of the paired clans into fours and an association of these with directions. Arrow-Sun-Eagle-Turkey is as yet incapable of subdivision. Kachina includes Raven-Macaw as well as Pine-Cottonwood. It is tempting to connect Rattlesnake-Panther with Deer-Antelope because the Rattlesnake appears in myth and ritual as a horned water monster. It is suggestive that the Hopi class Snake and Horn as the two clans or clan groups that came from the north. Squash-Crane and Cloud-Corn also can hardly have escaped association. Both, according to the Hopi, are from the south. The other southern clans of the Hopi are Lizard-Earth and Rabbit-Tobacco; but to predict now that these were therefore connected in the native mind, would be venturesome, although they are usually mentioned in juxtaposition by native informants.² It is not unlikely that the outcome of further studies in this direction will be, literally, that instead of the native traditions explaining the existing social organization, the scheme of this organization will explain the traditions.

¹ There are two references which make it appear that there may be a distinct recognition by the Hopi of two orders of social classification. In the parts of Victor Mindeleff's "Study of Pueblo Architecture" (Bur. Am. Ethn., Ann. Rep., viii) compiled by Cosmos Mindeleff from materials collected by A. M. Stephen, there are these statements: "These people are socially divided into family groups called wingwu, the descendants of sisters, and groups of wingwu tracing descent from the same female ancestor, and having a common totem called myumu (sic)" (p. 16). This seems to make the myumu a clan and the wingwu a matrilinear group of actual blood relatives within the clan. In the list of families on pp. 105–108, the clans referred to are listed, on the first mention of each, as winwuh or nyumuh (sic). Thus:

BakabwinwuhReed HonaunyumuhBear

In this way Young Corn Plant, Jack Rabbit, Bear, Parroquet, Eagle, Hawk, Mescal Cake, and Kachina are listed as nyumuh, and Burrowing Owl, Reed, Sand, Badger, Coyote, Lizard, Squash, Sun, Moth, and Crane as winwuh, while Spider, Bow, and Rattlesnake are not identified as either. Here it would be tempting to consider the nyumuh as "phratries" and the winwuh as "clans," an interpretation not wholly incompatible with the words of the previous passage. But unfortunately, several of these eight "phratral" nyumuh appear in the formal classifications of Stephen and Fewkes as clans, sub-clans, or synonyms, while on the other hand a number of the "gentile" winwuh are clearly not such minor divisions but groups of "phratral" size. The hint for all its promise of being an important clue therefore ends in a conflict and doubt.

^{*} Bur. Am. Ethn., Ann. Rep., xix, 585 (four times), 651, viii, 39.

RELATIONS WITH NON-PUEBLO TRIBES.

A rich reward bids fair to crown a penetrating but critical endeavor to connect the clan system of the Southwestern Athabascans with that of the Pueblos. In spite of the overlay of place names, it is clear from the available literature that there is some totemic basis for Navaho gentile organization. The naming of clans after places is evidently a mere disguise or form of appearance. It is likely to be direct Navaho influence that has led the Hopi to enter so fully upon localization of their clans in their traditions, where Zuñi myth, and apparently Keres and Tanoan too, virtually ignore this element. The matter is however too intricate to pursue here, and must be left to investigators of the Navaho and Apache or to a thorough comparative study of the interrelations of the nomadic and town tribes of the Southwest.

Outside the Pueblo region, and in many respects — such as ceremonialism - well outside of Pueblo influence, are a people with a clan organization of definite but light structure: the Mohave. The Navaho veil the presumable totemic basis of their system under appellations of localities. The Mohave avow the totemic reference, but express it in their institutions only through the names of female clan members,—though gentile reckoning in itself is patrilinear. Of about two dozen Mohave totemic implications, half can be placed outright in the Pueblo clan scheme: Cactus, Deer, Mountain Sheep, Cloud, Frog, Food Obtained by Agriculture, Mescal, Tobacco, Fire, Coyote, Sun, Eagle. Others probably correlate: Owl, Screech Owl, Moon, Wind, and Wood Rat; while most of the remainder relate to animals and plants not belonging to the Pueblo area, but probably with equivalents there. Such are Mesquite Bean, Mesquite Screw, Quail, and Beaver. These correspondences must be judged in the light of the fact that the Mohave clans existed in a setting deeply different from that of the Pueblos. There was not a mask, a priest, a kiva, a religious society, a prayer for rain, a scheme of color symbolism, a prayer plume, or any sprinkling of meal, among these half Californian people of the lower Colorado: nor a stone house, a town, nor a trace of mother right.

STRENGTH OF THE GROUPS.

A comparison of the populational strength of the various clan groups at Zuñi, on the three Hopi mesas, at Hano, and at Cochiti, gives reasonable correspondences for the various communities, especially the larger ones in which fewer clans have died out. For convenient comparison the clan

groups are arranged in the order of their size at Zuñi, and the numbers for the other towns have been multiplied by a simple factor yielding a total approximately the same as that of the Zuñi population. All the numbers have been slightly rounded.¹

STRENGTH OF PUEBLO CLANS.

! !	Zufi	Hopi, West Mesa: Oraibi	Hopi, Middle Mesa: Mishong- novi and Shipaulovi x 4	Hopi, East Mesa: Walpi and Sichumovi	Hano x 10	Cochili x 6
Sun, Eagle, Turkey	520	410	520	90		25
Dogwood	430	110	60	55	580	565
Corn, Frog	195	100	200	225	560	120
Badger, Bear	195	210	560	160	140	_
Crane	100	20	60	— ;		90
Coyote	75	210	80	80		130
Tansy-Mustard, Chapar- ral Cock	60	-	_	255	_	205
Tobacco	45	110	20	185	150	¦ —
Deer, Antelopes	20	_	<u> </u>	295		-
Rattlesnake		10	_	120		. —
Lizard, Earth		220	20	145	150	. —
Of unknown affiliation	10	90	_		_	490
	1650	1490	1520	1610	1580	1625

It is evident that there is no great anomaly in the proportional representation of the clan groups at Zuñi. On the other hand, there are very notable differences between the three Hopi mesas, which would have been further accentuated if individual towns instead of town groups had been listed. With such diversity prevailing between the members of a closely knit and isolated body of towns of the same speech, it is rather surprising that Hano and Cochiti do not differ more from Zuñi. It is also evident that it is the Middle Mesa among the Hopi that in its clan distribution reveals the closest similarity with Zuñi. It is however on the East mesa that the Zuñi claim one of the towns as their own, an assertion that is



¹ For Walpi, Sichumovi, and Hano there is the personal census by Fewkes; for Oraibi, Mishongnovi, and Shipaulovi the house count of Stephen-Mindeleff; for Cochiti Starr's census. The Zufii figures are the number of inhabited houses multiplied by seven and a half.

said to be confirmed by the Hopi.¹ It is extremely desirable that further data of this kind be obtained for some of the other Keresan and Tanoan communities.

As regards the clan groups, it is plain that what is abnormal about the Dogwood or Kachina group at Zuñi is not its size but the fact that it has been consolidated into a single clan. It is the Hopi who are exceptional, perhaps, in having this group weakly developed in numbers. The Arrow-Sun-Eagle-Turkey group is very variable; perhaps because it is not a true group. Cloud-Corn, as might be expected, runs strongly everywhere, though it shows no evidence of being the dominant group among any people. Much the same can be said of Badger-Bear. The lack of Lizard-Earth clans at Zuñi as well as at Cochiti may reflect a Zuñi-Keresan peculiarity. It is likely from all the evidence available that the Zuñi bonds to Laguna, Acoma, and Sia were at least as close as with the Hopi. Very striking is the almost total absence of the Deer-Antelope and Rattlesnake-Panther groups except on the Hopi East Mesa, in spite of the comparative ritualistic importance of these clans at Zuñi as well as among the Hopi in general.

RELIGIOUS FUNCTIONS OF CLANS.

RELATIONS TO THE FRATERNITIES.

One of the matters of greatest interest concerning the Pueblo clan is its relation to the religious society or fraternity. That such connection exists in some measure, is indubitable. The very resemblance in size, in name or totemic reference, in the fact of organization as part of a scheme, must inevitably cause an approach and partial assimilation that results in certain connections. The clan and the fraternity can be viewed as expressions of two distinct needs or impulses, one social, the other religious; but this fundamental diversity of direction would not prevent one influencing the other, or both taking the same color and similar outlines under the impress of the general culture in which they flourished.

But it is superficial to assume that because the Pueblo clan and fraternity reveal certain associations, they are at bottom one, and that all

¹ Stevenson, p. 411, note b. Compare Fewkes, xix, 584, 610, 1900. The only specific resemblance of the East Mesa to Zuñi is the presence of the Tansy Mustard group. This may rest on an actual movement of a body of families; and this movement, vaguely augmented in tradition, may be the basis of the native belief in a connection between the towns

discrepancies between them are only the distortions due to the meaningless accidents of time. On the ground of theory I could no more believe that the Pueblo fraternities are merely clans ceremonially organized than I can adhere to the view that the clans were once separate local communities.

The question cannot however be settled or even argued with much profit on the basis of opinion, and what is needed for progress toward its solution is facts. We must therefore be grateful to Dr. Fewkes for having presented a valuable body of specific evidence on one aspect of the problem among the Hopi.¹ He gives most of the male and part of the female membership, by clan affiliation, of the fraternities at Walpi. Each of these religious bodies is traditionally linked with a clan or group of clans, which are supposed to have founded or introduced the fraternity and its ceremonies. Dr. Fewkes's data may be summarized as follows:—

	Membership by Clans													
Fraternity	Traditional Founding Clans	Snake	Horn	Flute	Squash	Cloud	Lizard-Earth	Rabbit-Tobacco	Tansy Mustard	Kachina	Firewood	Reed	Badger-Bear	Total *
Antelope	Horn	3	1	1		3	1		_	_	1		_	10
Snake	Snake	7	1	1	_	7	. 1	4	7	1	1	2	3	35
Flute	Flute	3	 —	2	 —	2	-	1	2	-		1	_	11*
Aaltu	Squash	2	2	1	_	4	6	5	6	2	2	1	6	37
Wüwütcimtu	Squash	5	2	i —	_	1	3	3	7	2	3	1	_	27
Tataukyamu	Rabbit-Tobacco	2	4	4	_	3	2	6	2	2	3	2	4	34
Kwakwantu	Cloud	2	1	2	_	7	2	4	3	1	_		3	25
Lalakontu	Cloud	<u> </u>	1	!	_	6	l —	i —	1	_	 		<u> </u>	88
Mamzrautu	Squash	4	-	! —	<u> </u>	3	-	_	2		1	-	-	108
		28	12	11	_	36	15	23	30	8	11	7	16	

It is clear from these statistics that there is a very slender tendency for the traditional founding clan to be more heavily represented in its fraternity, proportionally, than other clans; and that, conversely, the members of a clan incline slightly more to membership in the society traditionally asso-

¹ In "Tusayan Migration Traditions," op. cit., 622-631.

² Excludes members of Hano clans and a few doubtful cases.

Data incomplete.

ciated with their clan than to membership in others. But the predominant impress of the figures is in the other direction, namely toward the conviction that membership in all fraternities is shared, and nearly equally, by members of all clans. Thus Horn has only 3 members out of 10 in the Antelope society, Snake 7 out of 35 in the Snake society, Flute 3 out of 11 in the Flute society, Rabbit-Tobacco 6 of 34 in the Tataukyamu, Cloud 7 of 25 in Kwakwantu; besides which there are three societies associated with a clan group which is extinct. The only exception are the six Cloud people among eight recorded Lalakoñtu members; but there the data are avowedly very imperfect. The results are the same when the figures are read the other way around: 21 of 28 religious memberships of Snake clan people are in fraternities other than the Snake society, 11 out of 12 for Horn, 2 of 11 for Flute, and so on. Even the Cloud clan has 13 memberships in its two associated societies, but 23 in other fraternities.

I cannot therefore agree with Dr. Fewkes in accepting the elaborated native view that the Snake society ceremonies were originally a "zoototemic" clan ritual of the Snake clan, and that subsequently "the advent of other families" has "changed the social connections of the personnel" of the society and altered the purpose of the ritual, "so that at present it is a prayer for rain and for the growth of corn — a secondary development due mainly to an arid environment." That this interpretation is logically possible, is evident enough. But it is precisely something to be demontrated instead of postulated. And Dr. Fewkes's own evidence so far appears to be overwhelmingly unfavorable to his view.

That there is some leaning of the Snake clan toward the Snake society and vice versa, and so on, proves nothing as to origins or even former status. Even if a clan and a society sprang from utterly diverse sources and impulses, the mere fact that they had a common name or had become symbolically associated, would be sufficient to produce such a tendency. Having a Snake clan and a Snake society, the Hopi would be an extraordinary people if they did not in some way connect the two, positively or negatively, no matter how unrelated the pair of bodies might be in source or purpose. In fact, one might incline to expect a stronger connection than actually is evinced.

When now we turn to Zuñi, there is a significant statement by Mrs. Stevenson on the last page of her great work:—

What part clanship played in the dawn of the ritualistic life of the Zuñi is yet to be determined. It is certain that for a long time past membership at large in the fundamental religious bodies of the Zuñi has not been dependent on ties of clanship, though in certain cases succession to office in fraternities does depend on clanship.

I am able to confirm Mrs. Stevenson's verdict in the fullest degree. The fraternity affiliations of the fifty-six members of the Coyote clan (Table 7) are distributed as follows:—

Makkyetlannakwe 3 persons in house 184 Makkyets'annakwe 1 in 424, 1 in 454a Sanniakyakwe 1 in 186 Shuma'kwe 1 in 186 Shi'wanakwe 1 in 323, 2 in 424 Chikkyalikwe 1 in 440 Uhhuhukwe 1 in 369, 1 ex 369 Peshatsillokwe 1 in 538b, 1 ex 454a

Hallokwe 1 ex 424 Apitlashiwwanni 1 ex 186

Total, 17 memberships in 10 fraternities, with 3 fraternities not represented. The largest number of Coyote people in any one society is three. It is particularly significant that there is only one Coyote clan member of the Sanniakyakwe; for the Sanniakyakwe or "Hunters" are often loosely though improperly referred to as Suskikwe, which means either "coyote clan" or "coyote fraternity"; in fact, Suskikwe is probably the more frequent designation of the society in popular usage. A connection of this clan and fraternity would therefore seem specifically indicated; yet is not at all borne out by the facts.

It is also plain that members of the same family tend to join the same fraternity: three people of house 184 in Makkyetlannakwe, two of 424 in Shi'wanakwe, two of 369 in Uhhuhukwe.

In recording the census of the Tobacco clan (Table 8), I secured also the fraternity affiliations of men married into the clan. In this case the household solidarity comes out even more clearly.

Kin group in houses 72, 557, 561:

Makkyetlannakwe: 3; her mother's sister's daughter 12; husband of sister of 3; husband of sister of mother of 3

Shuma kwe: mother's brother of 3

Kin group in houses (42), 328:

Shuma'kwe: 1
Kin group ex house (223):

House 517a: Makkyets'annakwe: 6; her sister 7

House 549a: Shi'wanakwe: 36; her mother's brother 37

Hallokwe and Tlewwekwe: brother of 37

House 558: Hallokwe: 33; his sister's daughter 27; his sister's son 29

Makkyetlannakwe: husband of sister of mother of 27

Makkyets'annakwe: 32

It is clear what happens. A person belongs to a society. One of the family falls sick — a husband, wife, child, sister's child, or a brother or

mother's brother married out. A fraternity is to be called in to cure the patient, and receive him or her into its ranks subsequently. Two times out of three, the fraternity is chosen which already has affiliations in that family. An Uhhuhukwe thinks of the Uhhuhukwe to treat his nephew or wife or child rather than the Ne'wekwe or Makkyets'annakwe in which he may happen to have no relatives. In short, it is blood relationship, and beyond this common home life, that most frequently determine choice of fraternity; not clan pertinence. We are confronted by another instance of kinship and the house, in other words familiar personal association, being the decisive factor at Zuñi in affairs which among other clan divided peoples have generally been assumed to be ruled by clan laws and clan connections.

To clinch the matter, I reversed my procedure, and recorded the clan affiliations of the members of a fraternity. Table 11,

TABLE 11.

Membership of the Ne'werwe Fraternity

Name	Sex	Clan	Father's Clan	Mode of Entry	Notes
		A	mossonne	a, Heads or	Officers
1 Kuwacci	M	Cr	Be		Nemossonna, head of fraternity This is the only office that must be filled by a member of a specified clan. The reason is that the Ne'wekwe fetish is Crane.
2 Annu'u	, M	P	Cn	Sickness	Akwamossi, medicine head
3 Lu'nasi	M	Ba	?	Sickness	Pekkwinne, speaker. Resigned
4 Kyacna	M	Cr	Cn	Trespass	Nemossonna tca'le, child of head of fraternity, has care of ne'et tone, the fraternity fetish. First cousin of 1.
5 Tsatisilu	М	Ba	P	Sickness	No title, has to do with the prayer plumes. Husband of first cousin of mother of 1. Frater nity father of 42, i. e., he initiated her.
		Ne'	wekwe Ti	kkyillaponn	a, Members
6 La'tiluhsi	M	Ba	P	Transfer	From Peccatsillokwe
7 Ci'pala	M	E	?	Sickness	
8 Nu'iti	M	E	Nav.	Point of death	Younger brother of 7
9 Tsa'tsana	M	P	?	Trespass	Is Ky'akkwemossi-Lacci of th
10 Hufikye	M	Cn	P	Sickness	Son of 9
11 Mawwe	M	Tk	E	Sickness	
12 Kaimutiwa	M	P	E?	Sickness	
13 We'tci'i	M	E	Tk	Sickness	
14 We'pac	M	S	Cr	Sickness	Son of 4
15 Ha'mona	M	Ba	?	Sickness	
16 Tsa'ti'eluhsi	M	P	E?	Sickness	Half-brother by same mother of 1
17 Commicci	M	Tk	S	Transfer	From Uhhuhukwe
18 Layasiati'ts'a	F	Tk	s	Sickness	Younger sister of 17
19 Lautihyalu'ts's	F	Cr	Tk	Sickness	
20 Tsayati'ts'a	F	Tk	?	Sickness	
21	F	E	Cr	Sickness	Mother-in-law of Pe'ussi
22 "Kwanatelita"	F	F	Be	Sickness	
23 "Lo'kane"	M	F	E	Sickness	
24 E'ts'ena	M	P	E	Sickness	Son of 8. Lives in the Ne'wekw
	1	1 -	_	1	,

TABLE 11 — (Continued).

Name	Sex	Clan	Father's Clan	Mode of Entry	Notes From Peccatsillokwe. Mother of 23.	
25 Laya'ayati'ts'a	F	F	?	Transfer		
26 Tcihna	M	Cn	P	Trespass	Fraternity father of 1.	
27	F	E	?	Sickness	Mother of 7 and 8	
28 Laitisilu'ts'a	F	E	Cn	Sickness	Sister's daughter of 27	
29	F	E	?	Sickness	Wife of 16	
30	F	E	P	Sickness	Daughter of 16 and 29	
31 Tsena'itti	M	S	P	Sickness		
32 Ts'ayu'iti'tsa	F	Cn	Ba	Sickness		
33 Tsaniasi'ts'a	F	Ba	?	Sickness	Stepmother of 5	
34 "Manuelita"	F	Tk	Ba	Sickness	Resigned	
35 "Pintu"	M	P	Be	Sickness	Resigned	
36 Hu'ni	M	Tk	S	Sickness	Resigned	
37 Ayyuyisiwa	M	Tk	S .	Sickness	Younger brother of 36. Resigned	
38 Kyenti	M	Tk	s	Sickness	Younger brother of 36 and 37. Resigned	
39 "Husantonio"	M	Ba	?	Sickness	Father of 34. Resigned	
40 La'tomai	М	P	Cr	Sickness	Younger brother of the recentle deceased wife of the Kommon	
41 Worsehaiti'ta'a	F	Cn	D2	Sickness	sonna, who was also a member	
41 Wayahsiti'ts'a	F		P?		1	
42 (Wife of Tsiwahti)	H.	E	,	Sickness	Sister of 27, mother of 28	

NOTES ON TABLE 11.

There are only two "orders" or classes (the Zufii call these tikkyawe, the same as the fraternities themselves) in this society. The ne'wekwe are the members of common rank, who have only a baton or "bauble." The akwawe tikkyillaponna or "medicine fraternity having" constitute the order of those who cure sickness, and are miwilli, that is, have miwe, or ceremonial feathered corn ears. This order is also called onna-yanakya "road complete" that is, completing the path of life of the sick to its full end.

7 of the 42 members, including one of the officials, have left off active participation in the society's doings. This is called *tcunnekya*, the common word for "finished, ceased."

There are five modes of becoming a member.

Taboo, or iteckwihkya, touching the privates of a member while he is teckwi or

sacred. It is significant that the head of the society is the only present member who entered by this method.

Trespass, or allukya, "be snared or caught," compulsory initiation in consequence of entry into a ceremonial session of the fraternity. Children who blunder into the room are said to be made members; but it is of interest that the only three Ne'wekwe who joined by allukya are old men, who undoubtedly knew what they were doing. This, like the last, seems therefore to be a ritualistic device to enable voluntary affiliation to take place without sickness.

Sickness, or we'awakya, is the commonest mode of joining the fraternity: 34 of 42 members entered in this way. It is not necessary for the recovered patient to join the society that cured him. Payments may be made instead to the particular official that extended the treatment, and the patient be "given" to him as a member of his family; but the fraternity is often entered. The initiation takes place at the next regular meeting for the purpose. The strong preponderance of this avenue of affiliation,—particularly in a society whose public rituals are marked by buffoonery more excessive than that of the masked Koyyemshi and similar to that of the Rio Grande Koshairi,— stamps the fraternities of the Zuñi as eminently curative in their avowed purpose, and goes far to explain why there are no true shamans in this tribe. The ritualized medical societies have evidently left no need and little place for the individual who receives power directly from personal association with the supernatural world. When Zuñi home remedies or treatment by an individual fraternity member fail, the society is called in. This is not saying that the Zuñi fraternities began their existence as medical bodies or originated in associations of shamans. The Hopi societies are rather devoted to rain making; those of the Sia approximate more closely to the Zuñi fraternities. Either the Hopi or the Sia-Zuñi type of fraternity may have been the more original, or they may both be modifications of organizations with a still different purpose. The point obviously cannot be determined by a study of one tribe alone. We must know the functions of the societies among all the Pueblos and if possible their neighbors, and be able to realize justly their relations to the other manifestations of Pueblo civilization, before an answer to the question of former type and course of development can be given. To formulate a history on the basis of the present societies in a single tribe, or the geographic environment of that people, is purely speculative.

In case of critical illness, a patient is occasionally initiated immediately, that is on the fourth night, by the Kokko-Lanna or great god and two associates, who visit is him in his own home. This seems to be the only occasion on which this fraternity or any other uses masks or impersonates gods. This procedure is called acceni'a heccina pu'akya, "about to die hurriedly initiate." There is only one such Ne'wekwe member at present, and Kokko-Lanna initiations by the two fraternities that practise this method seem ordinarily to occur only at intervals of some years.

A member of any fraternity can join any other — except the Apitlashiwwanni and perhaps the K'oshikwe — by voluntary transfer. He is then only washed, his initiation into his former society apparently sufficing for the new one. There are three Ne'wekwe who have come in by transfer; but it is probable that most of the seven who have "resigned" have become members of other bodies.

The clan affiliations of the Ne'wekwe are distributed as follows: —



	Clan	Father's Clan
Crane	3	3
Pikchikwe	7	6
Eagle	9	3
Badger	6	2
Sun	2	5
Turkey	8	2
Corn	4	3
Frog	3	
Bear		3
Undetermined		15
	•	
	42	42

The only connection which the fraternity has with a clan is with Crane. As Mrs. Stevenson says, the head of the Ne'wekwe must be Crane. It seems that this is because the ettonne or fetish of the society is Crane, that is, in the keeping of some member of the Crane clan. It appears below that the relation of non-fraternity priests to clans is essentially of the same nature: the ettonne of each priesthood is associated with a clan.

Family groups are again strongly represented: —

1, 4, 5, 14, 33
7, 8, 24, 27, 28, 42
12, 16, 29, 30
17, 18
23, 25
36, 37, 38
34, 39
9, 10, 41
40 and a dead sister

This makes 27 persons, or two thirds the membership of the society, in eight family groups; and my tracing of kinship is very likely incomplete.

The only specific references to clan membership functions in fraternity organizations which I have found in Mrs. Stevenson's work are the following,—most of which refer to one society.

The directors or heads of the Shiwannakwe and Saniakiakwe societies are of the Turkey clan, those of the Newekwe and Hlewekwe of the Crane clan. The pekwin or deputy 1 of the latter fraternity must be Corn clan.2

The Hlewekwe Hlemmosona (sword director) must be Crane clan. Other offices are filled by the Pichikwe clan, while the warrior must be of the Bear clan.³

¹ Literally: "speaker."

² P. 40.

³ P. 449.

In the Hlewekwe ceremonies there is a procession to carry a bundle of prayer plumes to a spring. This is headed by a Crane man, personating the original director. He is followed by four representatives of the beast gods. The first warrior personates the Panther of the North and must be Corn clan, there being no Panther clan; the second and third personate the Bear and Badger and must be Bear and Badger clan respectively; the fourth, who represents the White Wolf, may be of any clan.

On the fourth day of a Hlewekwe initiation, the sword director, warrior, and six members belonging to the Crane clan, go to the house of the hle-ettone, while a Dogwood member visits the house of the Shiwanni of the West to receive a prayer plume.²

Later in the Hlewekwe ceremonies, two Bear clan members sprinkle meal upon notched sticks and scrape these.³ During the next song, the Muchailihanona, who must be Pichikwe, or child of Pichikwe, appears.⁴

The director of the Shumaakwe fraternity must be of Chaparral Cock clan and his pekwin a child of Chaparral Cock. Other officers must be Crane, Pichikwe, and Frog. or children thereof.⁵

In the Great Fire fraternity, the medicine water maker and his speaker are always Eagle clan or child of Eagle, the sword director and his speaker Badger or child of Badger. The mosona or director, and other officers, it appears, can be of any clan.

In the Bow priest initiation, two young men, of Deer and Bear clan, stand north and south of the Shipapolima excavation and mounds and clasp hands.⁷ The holder of the scalps in the circle dance around the pole is always Coyote clan or child of Coyote.⁸

I have only one observation of my own to add. No Badger person can become a Tlewwekwe. A young Badger man recently touched a Tlew-



¹ P. 445. This is a standard Zuñi symbolism — Panther-North, Bear-West, and so on. The clan selections have simply been made, inadequately it is true, but as nearly as might be, with the purpose of expressing the symbol-complex.

² P. 453. The clan participations here have reference to the fetishes or ettowe of the fraternity. The Tle'ettonne or fetish par excellence of the Tleweekwe is kept in the Crane house 177. A second fetish also sometimes called Tle'ettone is the Mu'ettonne, or fetish of the Muwaya ceremony, which rests in Corn house 38, together with a specifically Corn clan fetish. (Just so Crane house 286 harbors the Crane clan fetish and that of the Ne'wekwe which compels a Crane director of that society.) Mrs. Stevenson, p. 444, speaks of the Mu'ettonne as "the cherished possession" of the Crane clan. In the myth, three other fetishes were later designated as Mu'ettowe: these belonged to the Corn, Badger, and Tansy Mustard clans (p. 446). These would appear to be the clan fetishes numbers 47, 44, and 51 of my Table 12. As for the Shiwwanni of the West, he is Dogwood clan, according to Mrs. Stevenson, p. 167.— In this matter then, the association of fraternity and clan is wholly through the fetishes owned or used by the fraternity.

³ P. 473. Mrs. Stevenson does not explicitly state that this clan choice is regulated, but such seems to be her implication.

⁴ Pp. 447, 473. This personage is the leader of the procession that carries the fetishes just referred to.

[•] Pp. 532, 411.

[•] P. 486.

⁷ P. 584. The author is describing a specific representation of a ceremony, and does not state whether this selection was an accident or part of the prescribed ritual. The latter seems more likely. On the other hand, in a list of participants in the circle dance of the Bow priesthood (p. 605), the clan affiliations are probably meaningless, so far as they do not relate to priests.

P. 605.

wekwe official while he was teshkwi or taboo, with the intent of becoming a member; but was declared ineligible on account of his clan.

The names of the Zuñi fraternities have little similarity to the designations of Pueblo clans, and almost none to those of the Zuñi themeslves. The Great Fire and Little Fire societies might be connected with the Coyote-Firewood-Fire group (makkye is a firebrand or glowing coal, not fire as such): but derive their name much more probably from the fire-playing and fireeating jugglery of these fraternities. There are Ant and Cactus and Wood clans in other pueblos; but the Zuñi societies of these names seem to be named from their practices of curing illness brought on by ants, of whipping with cactus stems, and of swallowing wooden swords or staves. The Bow priests are so called as a warrior society, whose heads constitute the secular or executive arm of the Ashiwwanni priesthood. The names of other fraternities are either obscure or trivial. The Shi'wanakwe are those who do not abstain from meat, according to Mrs. Stevenson, the Shuma'kwe are named from Shuminna, a spiral shell.2 The latter etymology seems Zuñi, but is probably false. The Shuma'kwe keep the Shumaikoli or Shumeyekoli masks, which are known also in eastern Pueblos; in fact the Laguna Shumaikoli masks are in the keeping of the Zuñi Shuma'kwe today. Before the Zuñi etymology can be accepted, it will therefore have to be proved that there is no satisfactory Keresan or Tanoan one. Mrs. Stevenson renders Uhhuhukwe as "Eagle-down" and Chikkyalikwe as "Rattlesnake." U- is the stem for down, wool, cotton, or foam, and chi- is the first syllable of the word rattlesnake, tcittola. But the remaining elements of both names are obscure, and I have never obtained a translation of either. The same is true of Ne'wekwe, Mrs. Stevenson's "Galaxy" society. Finally the Peshatsillokwe or "Cimex" fraternity is so called because when this society seceded from Little Fire, its members found their new headquarters infested with bed bugs.³ When a people establishes its nomenclature upon such incidents, it would be far fetched to look for constant esoteric connections between the designations of its fraternities and its clans.

So far as the Pueblos as a whole are concerned, all that it is possible to say in the present state of knowledge, which leaves us still ignorant as to the real identities of the societies in the various pueblos, is that fraternities of certain names, such as Knife, Ant, Snake, Flute, and Firebrand, have a wide distribution, and that some of these appellations appear also as names or synonyms of clans; but that, if there is connection between the two sets

¹ P. 428.

^{*} Ibid., p. 530.

^{*} Ibid., p. 550.

of designations, the clans are as likely to have received their nomenclature from the societies as the societies from the clans.

In fine, the Zuñi fraternity is, if not primarily, at least largely, a body of religious physicians. Membership is not limited by sex, is voluntary, and is not clan controlled but tends to follow blood kinship and marriage connection. Such slender relations as the fraternities have to clans are expressed in the personnel of their officers, but seem to rest basically on the association of their fetishes with particular clans.

I suspect that this description will prove to apply fairly well to the societies of the other Pueblo Indians. That membership follows personal relationship rather than clan adherence at Sia, and that at least a considerable part of the function of the societies there is curative, appears from Mrs. Stevenson's valuable essay on that pueblo, and may therefore be inferred for the Keres at large, and as probable for the Tanoans. At Hopi we hear more of rain making than doctoring, and more of "priests" than of "theurgists." The fetishes are also relatively less important than at Zuñi; or else have been unduly neglected by students. But the statistical studies of Dr. Fewkes prove the slightness of the bond between clan and society, except as a theoretical and mythological one, and consequently increase the probability of the factor of blood lineage being potent. That each of the groups of pueblos, each town even, will show a certain individuality in the character of its fraternities, is to be expected; and it is likely that the Hopi will prove to be the most peculiar. But the common element is bound to outweigh idiosyncracies, in so restricted and special a culture as that of the Pueblos; and the clan and kin relations of the fraternities everywhere in the area may therefore be anticipated to be similar to those here outlined.

RELATIONS TO THE KOKKO CEREMONIES.

On the whole, the religious functions of the Zuñi clans come out most markedly in the ritual institutions other than the fraternities, those connected with the Ko-tikkyanne, the "god-society" or "masked-dancer-



¹ Op. cit., p. 112. The Sia Querranna society has a reduced membership of three: the honaaite or head (corresponding to the Zuñi mossona), the vicar (evidently the Zuñi pekkwinne), and a woman; besides a five year old boy novitiate. "Three generations are represented in this society: father, son, and grandson." The lineage is paternal, Sia clans maternal: thus close kinship is the determining factor. Compare p. 76: "The honaaite (of the Snake fraternity) and his younger brother were joined by the third member of the society." Fragments like these indicate that a condition of society closely parallel to that obtaining at Zuñi will be found among all or nearly all the Pueblo Indians as soon as attention is directed to other matters than the clan pattern that has so long been uppermost in our minds.

society." It is in these ceremonies, with but few exceptions, that all the masks are worn; it is with them that the kiwwitsiwe or kivas are associated; and it is they that are almost wholly concerned with rain and are directed by the ashiwwanni or "rain-priests," while the fraternities heal the sick or demonstrate magic, and have officials but no true priests. The Kotik-kyanne rituals often relate to shrines, the fraternities use altars and sand paintings. Finally, initiation into all fraternities is optional, and membership is open to women as well as men, whereas the Kotikkyanne includes all males but no females, and entrance is compulsory.

It is rather remarkable that the clans, or individuals specifically chosen because of their clan membership, should enter rather more frequently into the communal rituals of the Kotikkyanne than into fraternity ceremonies, since in names, in size, in their total number, and in the circumstance of their being equivalent units in a mass, the clan and the fraternity are similar. Yet such seems to be the fact. If confirmed by further researches, this unexpected correlation must lead to two inferences: first, that the Pueblo fraternity is, as already argued, only secondarily connected with the clan and not organically an outgrowth of it; and secondly, that the clan as such is to the native mind at bottom not an integral unit, like a group of blood relatives, but essentially a schematic subdivision, and perhaps a more or less artificial one, of the community as a whole. The latter conception is one which it has been my effort to develop in just measure on a variety of grounds throughout this work.

These are the principal of Mrs. Stevenson's references to functions of clan members in the Kokko rituals:—

¹ Excepting the Cactus and Bow priest fraternities, which are essentially warriors' societies.

^{*} Except in rare and special circumstances.

This dualism is absolutely fundamental to an understanding of Zuñi religious institutions. It has been well emphasized by Mrs. Stevenson through the complete separation of the two groups of activities in her book. The tribal rites of the Kotikkyanne she treats on pages 20 to 282, and separates by her account of arts, customs, and medicine from her description of the fraternities on pages 407 to 608. It appears that the distinction is also a basic one among the other Pueblos, though the manifestations of the two groups of ceremonies are not always exactly the same, the kiva, for instance, belonging to the tribal ritual at Zuñi, but to the fraterpities with the Hopi. Nevertheless, the difference is sharp at some points among the latter people: compare Fewkes, xix, 623, 630-631, 1900. The same may be said of the Rio Grande towns, in spite of Mrs. Stevenson's rather obscure presentation ("Other Societies," pp. 116-118, versus pp. 69-116 and 118-131, in Bur. Am. Ethn., Ann Rep., xr, 1894). The Sia Koshairi and Querranna, or at least the latter, appear to be true fraternities, but their functions ally them closely to the Zufii Koyyemshi or "mud-heads" who are an integral element of the tribal cult. - Compare the designations: Sia Katsuna, Hopi Kachina Zuñi Kokko,--- whence Ko-tikkyane.-- Mrs. Stevenson's Kotikili is not the name of the organization, but the designation of its members: tikkyanne, fraternity: tikky-illi, having a fraternity, a member thereof; ko-tikky-illi, having the god fraternity.

The Koyemshi are chosen annually from four fraternities in rotation, according to their fathers', not their own, clan membership. Thus the personator of the first Koyemshi, the Awan Tachu, must be, one year, a Newekwe man whose father was Crane clan; the second year, a Showekwe with a Pichikwe father; the third year, a Koshikwe with a Tobacco clan father; the fourth year, a Matkethlannakwe with Turkey father; and the fifth year as in the first. The second or Pekwin Koyemshi is chosen from the same four fraternities, but successively from among men whose fathers were Pikchikwe, Corn, Pikchikwe, and Badger. Eleven clans are thus represented among the forty impersonations of four years: 6 Pikchikwe and Badger, 4 Crane, Eagle, Sun, and Frog, 3 Corn, Coyote, and Turkey, 2 Bear, 1 Tobacco. It is not clear whether this intricate regulation is a conventional crystallization or rests on esoteric symbolism. In any event, it is not clan members but "children of clans" that are involved.

The Koyemshi masks seem to be in charge of a man of the Eagle clan.2

The Komosona or director of the Kotikili and his warrior or Kopitlashiwanni (literally, "god bow priest") must be Deer clan. The Komosona's Kopekwin or deputy (literally "god speaker"), and his warrior or Kopitlashiwanni must be Badger clan. The fact that the Deer Clan is almost extinct causes much anxiety to the Zufii. The present warrior to the Komosona belongs to the Bear clan, owing to the inability to find a man of the Deer clan among the Apitlashiwanni (Bow priesthood) to fill the place.

The ritualistic myth recited by Kiaklo is in the keeping of four men, two of whom must be Pichikwe and two children of Pichikwe. At the time the myth was secured, the four were respectively Parrot division of Pichikwe, Raven division of Pichikwe, Corn with Pichikwe father, and Frog with Pichikwe father.

The office of fire maker for the sacred fire of the new year is filled alternately by a member of the Badger clan and a child of that clan.⁵

At the winter solstice ceremonies, the idol of the elder God of War, the accom-



¹ Based on Stevenson, p. 235. I did not receive from the Zuñi the impression of free choice which Mrs. Stevenson conveys. At all events, the selection is not made by the clans involved. The Awan Tachu, the father of the other nine Koyyemshi, is first selected by the Ashiwwanni and given a prayer plume. Then the Pekkwinne tells him to cast about him in his mind and find associates who will fill their places well. There is a strong tendency to select the same men that occupied the posts four years before. In 1916, for instance, a Showekwe year, seven of the ten were the same as in 1912. In addition, the Awan Tachu of 1912 had been reëlected; but he died in May or June, shortly before the summer solstice dances. The woli ("manager" according to Mrs. Stevenson, "servant" according to the Zuñi) of the Koyyemshi was then designated to act temporarily in his place, and appeared in the first dance, on June 23 and 24. Of the two not reappointed, one was an old man who had become too feeble for the strenuous exertions of the office, although his absence was regretted, since a humped back had added to the ludicrousness of his presentation; and the other was the acting Pekkwinne of the summer of 1915, who was apparently mortified at not having been chosen to fill that distinguished office permanently, and refused to serve as Koyyemshi.

² P. 142. These masks are regarded as the equivalent of an ettonne or are intimately associated with a certain ettonne; and the set of priests that go into retreat in the house where the masks are kept, are in part actually Eagle clan, and are all considered or called Eagle clan people.

Pp. 47, 62.— The Komossonna in 1916 however is still of the Deer clan.

⁴ P. 66.

⁵ P. 114.

panying games, and four prayer plumes are made by men of the Deer clan, the corresponding objects for the younger God of War by men of the Bear clan.

On the ninth day of the winter solstice ceremonial the people of the Corn clan and the children of the clan "assemble in the house of the father or head of the clan to choose a man to personate Pautiwa."²

Late on the next day, Pautiwa enters the pueblo, preceded by five Sun clan men, and after four circuits deposits prayer plumes in the wall of a house at the east end of the town. He is assisted by a man of the Sun clan, who personates his father, and by two Pichikwe, who represent his brothers. After visiting the six kiwitsiwe, he proceeds to the northwest corner of the village and receives a hakwani, or cotton loop symbol, from a Pichikwe woman. After his departure, Heiwa kiwitsine is visited by Chakwena, whose personator must be of the Badger clan.

Before heading the quadrennial pilgrimage to Kothluwalawa at the summer solstice, the Komosona and Kopekwin are provided with prayer plumes made by men of their respective clans: Deer and Bear. In the pilgrimage, a Deer and a Badger clan man follow the director of the Hunters' fraternity and precede the Kopekwin.

At the first of the summer solstice dances, Deer women bring food, water, and yucca suds for head washing to the kiwitsine in which the Komosona is, and Badger women do the same for the Kopekwin in his house.

The Awan Tsita or Great Mother (better, "their mother") of the personators in the Kianakwe ceremony, who bathes their heads, is of the Corn clan.

The personators of the Kianakwe in the quadrennial dance of that name are always members of the Corn clan and Chupawa kiwitsine.

The people of the Frog clan take care of the spring Kiananaknana, which is sacred to the Ashiwanni or rain priests.⁸

In the quadrennial Hlahewe ceremony, the four Kiapunakwe are: Hlahewe side, youth, child of Dogwood, maiden, Dogwood, accompanying man, Dogwood; Shokowe side, youth, Corn, maiden, child of corn, accompanying man, Corn. In the next performance, the Hlahewe side youth is Dogwood and the maiden child of Dogwood, and the two Shokowe side impersonators interchange also, as to clan affiliation. In the third performance, the first arrangement prevails once more, and so on.

¹ P. 112.

² P. 126.— I do not believe that this allusion essentially contradicts my statement as to the absence of effective clan organization or the lack of recognized clan heads with social or clan functions. The occasion here referred to is purely ceremonial, and yet the ceremony in question is tribal. It might be that the clan, for the time being, filled the office of a body of priests. But I suspect the accuracy of Mrs. Stevenson's presentation on this minor point. In the first place, my informants insist that the Pa'utiwa impersonator must be Pikchikwe, not Corn. Secondly, I cannot conceive of a Zufi "father" of a clan. There are mothers and grandmothers; but older males are kyakkya or kyakkya-tacci — mother's brother or old mother's brother — or sometimes (maternal) grandfather. Finally, the choice by the clan as a body would be entirely unparalleled, and appears to me contrary to Zufii habits of thought and action. I should expect the selection to be made by some regular high official of the Kotikkyanne — the Komossonna, the Kyakkwemossi, or the six highest, Ashiwwanni denominated Tek'ohannakwe, "day persons"; or by some one designated by them; or by the kiwwitsinne whose turn it was to supply the Pa'utiwa.

Pp. 137-140.

⁴ P. 153.

[•] P. 162.

⁶ P. 44.

⁷ P. 218. The name Chuppawa relates to corn.

P. 59.

[•] P. 188 note b.

Toward the close of the same ceremony, a Frog clan man sings rain songs from dawn to sunrise, when his power causes prayer plumes and miwachi in the booth to fall over.

In the Bitsitsi ceremony, the fruit and seed bearing women who race to the assembled Molawe at Kushilowa, are selected by a Tansy Mustard man, "whose office is for life."²

RELATIONS TO THE PRIESTHOODS AND FETISHES.

Mrs. Stevenson gives an enumeration of the priesthood, by sets of priests and their clan affiliations, as constituted in 1896. The Pekwin, who is also priest of the zenith, must be Pichikwe, though the subdivision of this clan is immaterial. The Kiakwemosi, or "ruler of the houses," who is the head of the Zuñi hierarchy so far as there is any, is either Pichikwe or has a Pichikwe father. As regards the other priests, she makes this statement:

This priesthood is confined to families, the rule being that each member of a division of the priesthood [i. e., each member of one of the fourteen sets of priests] must be of the clan or a child of the clan of the shiwanni of the division. The son or brother of the shiwanni fills a vacancy, preference being given to the eldest son.

The impression derived from Mrs. Stevenson's formulation of the rule of succession in the priesthood is that actual kinship and not clan membership is the determining factor. This is corroborated by a note on the second division.⁵ After the death of the principal priest of this group, a Pikchikwe man, the position was not filled at once because the priesthood as a body were doubtful whether the first associate, his son, who was of the Sun clan, was of sufficiently pure heart; but he was finally accepted. If the same procedure should happen on this man's death, it is obvious that the next incumbent would be neither Pikchikwe nor Sun; and so on, the office varying at random from clan to clan in each generation.⁶ If this in-

P. 200.

² Pp. 277, note.c, 279.

² The Ashiwwanni or priests are connected with the Kottikyanne and not with the fraternities.

⁴ P. 165.

[•] P. 167, note b.

[•] Mrs. Stevenson mentions a similar situation as regards the priest of the first or north division, the Kiakwemosi (p. 167). A former Pichikwe incumbent was succeeded by his younger brother, of course of the same clan, who had as his first associate and presumptive successor, his dead brother's son, of Turkey clan. It would seem that this helr's successor in turn cannot however be his son, on account of the desire or necessity for the Kiakwemosi being Pichikwe or child of Pichikwe, neither of which this son could be. This highest priestship is however so distinctive an office that there may be an exceptionally strong feeling favoring its permanent association with Pichikwe, the largest and head of the clans, as the Zufii call it.

stance can be accepted as typical, and Mrs. Stevenson's formulation of the rule of succession as accurate, it would follow that the Zuñi do not specifically and permanently connect each priestship, or division of the priest-hood, with a clan; and that if they appear to do so, it is for the time being only and because a man's clan has a name and his family as such, or his paternal ancestry, has none. On the other hand, if the priestly offices are definitely linked to clans, Mrs. Stevenson's presentation cannot be exact.

My own information leads me to the conclusion that the Zuñi do connect each priesthood with a clan; but that this connection often exists in theory rather than in the actual personnel of the priesthoods. The prospective successor and other associates of the ranking priest of each priesthood are sometimes his sons; sometimes his brothers or his sister's children; and sometimes not relatives at all. Thus the principles of kinship in the male line, of kinship in the female or clan line, and of lack of kinship, are all adhered to at different times. To determine the precise relative potency of each, would require more detailed information of an intimately personal nature than I have yet been able to secure.

On the other hand, each set of priests possesses, or rather, operates with, an ettonne or fetish. These cotton-wrapped bundles of pieces of cane, containing various sacred or precious substances, are sometimes enclosed in feathers, normally kept in jars of special design, and handled or exposed only on occasions of extreme ritualistic importance. These ettowe are preserved in specified houses, where they are believed to have reposed since the Zuñi settled at I'tiwawa, their present town; and if a family abandons a house, at least the room in which the ettonne lies is usually kept in repair, and the associated priests continue to "go in" there. As usual at Zuñi, however, acts do not conform strictly to plan: and there are cases of ettowe having been removed. That of the Pekkwinne necessarily changes with each new incumbency.

Now these fetishes are on the whole linked, in the native mind, with clans — whether because each house belongs to members of a certain clan, or because of what tradition reports, or from a mere impulse toward elaborateness of schematization, I do not know. Mrs. Stevenson says:—³

While an ettone may pass from a shiwanni of the parent clan to one of the chil-



¹ The marked tendency toward descent from father to son in the priesthood as contrasted with the reckoning of female descent in house ownership and clan, will be of interest to those who are still wrestling with the problem presented by the old conception of the matriarchate.

² This is the literal meaning of the Zuñi word, kwatto, which Mrs. Stevenson renders "go into retreat."

P. 164.

dren of the clan, it remains in the care of a woman of the parent clan...this office passing from mother to daughter or from sister to sister.

It therefore seems probable to me that it is through the fetishes, primarily, that each set of priests is more or less associated with a clan. This is borne out by two circumstances. First, each fraternity also possesses an ettonne, and it is the clan affiliation of this that determines the clanship of the officers of the society, when there is any prescription at all. This correlation has already been discussed. Then, there is a third series of ettowe, which belong and relate specifically to clans. These are perhaps less sacred than those of the fraternities, and almost certainly not esteemed as are those of the priests; but they are also accorded a high degree of veneration.²

The prime importance of the fetishes in general is also manifest. I believe that the truest understanding of Zuñi life, other than in its purely practical manifestations, can be had by setting the ettowe as a center. Around these, priesthoods, fraternities, clan organization, as well as most esoteric thinking and sacred tradition, group themselves; while, in turn,

¹ In narrating the circumstances of an inspection of a fetish, Mrs. Stevenson tells of precautions observed to maintain secrecy, "there being no surety against intrusion, for, according to the custom of the Ashiwi, the people of the same clan are regarded as one family and have access to all parts of a house" (p. 164).- This is an irritatingly vague statement. I do not believe that every one of the four hundred members of Pikchikwe would feel at liberty to walk at will over all parts of the premises of any Pikchikwe woman. Privacy and seclusion are not matters settled in any such offhand fashion by the Zufii; and while the considerations may not be clear cut, and are very little known, they give every indication of being subtle and loosely intricate. I know of a case of a Shiwwanni unwilling to enter the room in which his ettone was kept, presumably because the proper ritualistic occasion was lacking, even though he was in anxiety that it might have been mistreated or removed. With the priest observing such scruples, it is not likely that others would follow him merely because the door was open, much less penetrate the sacred precincts of their own accord. The storerooms in which corn is kept are also entered by the owners only with a prayer and barefoot, or at least with one shoe removed; and I am confident that non-inmates, except near relatives, would not presume to go into these chambers without invitation. In some measure, a similar feeling seemed to me to prevail in regard to all inner and under rooms. On innumerable occasions I have not been asked to walk into an adjoining room, though the door was open and an object within was under discussion. In most cases a woman of the house brought the article to the front or living room rather than have it inspected in place. Of course this was the attitude toward one of alien race and a comparative stranger; but the behavior of my introducing friends indicated that it was maintained also toward the Zuñi, with the exception of those who stood on a basis of special intimacy or friendship with the inhabitants. Whether this basis of intimacy is by a convention made to include ipso facto all members of the clan, or whether the intimates normally but incidentally happen to comprise most members of the clan as well as actual blood kindred, is precisely the point to be determined. There is nothing to show that Mrs. Stevenson meant to speak specifically in this matter, or had even considered the alternative interpretations; for which reason it is likely to prove misleading to accept her summary statement at face value.

² There are then entirely similar fetishes, all called ettowe, for the priesthoods, for the religious societies, and for the clans; which fact alone goes far to support the interpretation that the Zuñi clan is much more a part of a ritualistic scheme than a body of kindred — a ceremonial rather than a socially functioning body.

kivas, dances, and acts of public worship can be construed as but the outward means of expression of the inner activities that radiate around the nucleus of the physical fetishes and the ideas attached to them. In other words, he who knows all that is knowable concerning the ettowe, must necessarily understand substantially the whole of Zuñi society; while familiarity with any of its other phases, except mythology, leads only a certain limited distance. Mythology, indeed, can also be used as a satisfactory starting point and basis, as Mrs. Stevenson has done; but this procedure tends to give priority to native theory and to leave its factive elements uncoördinated, while the ettowe open the direct gate to as coherent a cognizance of the existing society as it is possible to obtain.

The fetishes, naturally, are not discussed readily by the Zuñi with strangers, and my information about them is consequently less complete and probably less accurate than I could wish. The consequence of the subject, however, makes it seem desirable to present all the evidence available.

TABLE 12.

ZUNI FETISHES.

Number of Ettonne on Map 8	House in which kept	Clan in	Name of Ettonne	Priesthood, Fraternity, or Clan in 1916
		. Ettov	ve of the Aciww	anni or Priests.
1	161	P	Akyakkwamossi awan	 Kyakkwamo ssi, or: house-heads. Tciku (Chico), P, mossonna or head Tsa'tsana, P, Kyakkwemossi- Lacci, older than 1, and head until 1915. Not kin of 1. Tsi'autiwa, P, Kyakkwemos-
2	360	P	Ky'a'ettonne or Parto an	si-ts'anna, sister's son of 2. (4. A woman associate is dead.) Patto, or: (east) end (of the town) 1. Waihusiwa, S, head 2. Laya'tisi, P 3. Hinna, P
3	387	Ва	Tcu'ettonne	4. Tsaiuhsilufikya, P None of these are kin (5. A woman associate is dead.) Onnawa, or: at the road, on which 387 is situated 1. Kuyatsaluhti, P, child of Ba, head
				 La'usi or Nahanitta, Be, child of Ba Hustito (Justito), Ba Mikyela (Miguel), Ba, brother of 3 Itselkai, Ba, brother of 3 and 4 The mother of 3, 4, 5, Ba Ts'annatsaiti'ts'a, Ba, daughter of sister of 3, 4, :
4	87	P	Koyyemshi, that is, the ten masks reck- oned as an et- tone, or per- haps kept with an ettonne	

TABLE 12 — (Continued).

Number of Ettonne on Map 8	House in which kept	Clan in	Name of Ettonne	Priesthood, Fraternity, or Clan in 1916
5	(384)	(Ba)	Pikchikwe awan, or Pekkwinne an	Pekkwinne: the "speaker" of the Sun has no associates, and must be Pikchikwe. He is usually known by his title instead of his name. His ettonne is in whatever house he happens to be married or living in.
6	(167)	(P)		Apilaciwwanni: bow-priests 1. Ts'awela, elder brother bow priest, Cy 2. Wayeku, younger brother bow priest, S These are not, strictly, aciwwanni.
7	163	P	Kyakkyalikwe awan	Kyakkyalikwe: Eagle people (1. K'utci, P, head, died in 1916) 2. Mayyawe, E, present head, kyasse of 1 3. Halliana, Cr, child of Eagle 4. Kwalletci, P 5. Pa'tela, Tb
8	167	P		Upts'annawa: the kiva of that name 1. I'tailuhsi, Ba, head 2. Tcalliwa, S 3. Monta, P, related to house 167 (4. From 1914 to 1916 the present pekkwinne, who is ex house 167–164 and first cousin of 3, served in this priesthood.)
9	40	Cn	Towwakwe awan	Towwakwe: Corn people 1. Pontacci, Cn, head; lives in the house 2. Ci'tcuwinni, E 3. Son of Mo'kwella, Cn, sister's son of 1, also in house 40. He is a young man who fills the place of his dead brother.
10	60	P	This ettonne is kept with the sacred figure of Kollowissi, the water serpent	Kollowissi: 1. Kyakkyali, Cn, head 2. Kannawihti, M. 3. Kahtcanni, P. 4. Kwihma, P. 5. Q Paulita, P, older sister of 4

TABLE 12 — (Continued).

Number of Ettonne on Map 8	House in which kept	Clan in house	Name of Ettonne	Priesthood, Fraternity, or Clan in 1916
11	68	P (Orig. Ba)	This ettonne is accompanied by a large shell, whence the name of the priesthood	 Ts'u'lanna: Large shell Ha'ts'i, Ba, head; born and lives in house 68. Na'kyawana, P. Susie, P, born in her father's house, who is a brother of the mother of 1.
12	(372)	(E)	Cümmeyekolli masks	 Cuma'kwe, or: priests who are officers of the Cuma'kwe fraternity: 1. Ma'asewwi, P, head, also head of the fraternity. 2. Ta'kyakkwekwe, Cr, pekkwinne and akwamossi of the fraternity. 3. Me'li, Ba, pilaciwwanni of the fraternity. 4. © Wife of 2, E
13	186	Cy (Orig. S)		Yattokyakwe: Sun people 1. Tu'ky'ats'o'ta, Cr, head 2. Kuyalu, P. 3. Kuhimats'a, S.
14	391	Tk	Towwakwe awan	Ky'annakwe or Towwakwe: Correspeople 1. Lonhose, Cr, head, also head of the Ky'annakwe performers
لم				2. Lomansito (Ramoncito), Cr younger brother of 1. 3. Ca'lako, Cn. 4. La'silu, P.
15	220	P		Hewwimossikwe or LemaLticillowa: Step-people or Red door 1. Lanuitsawi, P, head, born in 220 2. Hu'pa, E. 3. LemaLticillowa, Tk, living in 220, father of 1; former head
				4. 9 Younger sister of 1, daughter of 3.

TABLE 12 — (Continued).

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Number of		,										
						1						
Ettonne on 1	House in	Clan	in			- 1						
Map 8	hich kent	. house	a '1	Name of	Ettor	ne	Priesthood	100	bote.	rnit v	~	Clan in 1916
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B. Ettowe of the Tikkyawe or Fraternities.

	1	1	1	1
21	268	P		Ci'wanakwe
22	286	Cr	Ne'ettonne	Ne'wekwe. Fraternity room is in house 7.
23	347	YW		Sanniakyakwe
24	177	Cr	Le'ettonne; cf. also no. 63	Lewwekwe. Fraternity room is in house 84
25			KokkoLanna	1)
26 }	422	Tk {	Ci'tsukya	} MakkyeLannakwe
27			Makkyeranna	
28	139	S `	(Horned toads	Hallokwe
			of stone)	
29	372	E		Cuma'kwe
30	312	S		Makkyets'annakwe
31	54	P		Uhhuhukwe
32	119	P	•	Tcikkyalikwe
33	278	F		Peccatsillokwe
34	1	P		K'ocikwe
35	357	P	Ponnepo'anne	ApiLaciwwanni

C. Ettowe of the Annotiwe or Clans.

41	96	P	La-piktcikwe awan	La-piktcikwe				
42	161	P	Mullakwe awan	Piktcikwe: Kokkokwe-Mullakwe Formerly in 295.				
43	506	E	Kyakkyalikwe awan	Eagle. Formerly probably in 190				
44			Tonnacikwe awan	Badger				
45	186	Су	Yattokyakwe awan	Sun. House formerly a Sun house				
46	398	Tk	Tonnakwe awan	Turkey. Formerly in 422				
47	38	Cn	Towwakwe awan	Corn				
48	286	Cr	K'oloktakwe awan	Crane				
49	267	F	Takkyakwe awan	Frog. Formerly in 278				
50	347	YW	Suskikwe awan	Coyote. Formerly in 373				

TABLE 12 — (Concluded).

Number of Ettonne on Map 8	House in which kept	Clan in	Name of Ettonne	Priesthood, Fraternity, or Clan in 1916
51	104	M	Ayyahokwe awan	Tansy Mustard
52	1		Annakwe awan	Tobacco
53			Ancekwe awan	Bear. Formerly in 33
54	81	D	Cohwitakwe awan	Deer
55	(buried)		Poyyikwe awan	Chaparral Cock. Formerly in 320
56	347	YW	Talluptsikwe awan	Yellow Wood. Formerly in 342
		D.	Miscellaneous	Ettowe.
61	161	P	Pa'utiwa an	Connected with the impersonation of Pa'utiwa, the leader of the gods
62	257		Na'ettonne	Used for the hunting of deer (na'le)
63	38	Cn	Mu'ettonne	Connected with the Muwaya cermony, with corn, and with the Lewwekwe fraternity
64	81	D		The minor ettonne of the extinct Ts'u'tikkyanne or Shell fraternity its great shell was buried
65	94	Вя	Pa'ettonne	"Navaho fetish." that is, etton

While the Zuñi statement is that each ettonne remains forever in the house where it was first deposited on the founding of the "middle place," there have been many shifts in recent years, and no doubt formerly also. The priestly fetishes being the most sacred, their removals take place least frequently, but even they occur. Ettonne number 2 was long kept in a rear room of house 360, and its priests "went in" there. This house is now vacant; the priests use part of adjoining 357 for their retreat; and the fetish may have been moved too. The Pekkwinne's ettonne, number 5, is of necessity movable; he "goes in" with it wherever he happens to live; when he is inducted into his office, he is taught about his ettonne, and then carries it to his home. Somewhat the same seems to be the case with the next set of priests, the two head bow priests. I do not know if they possess a specific ettonne; but they are counted as "going in" like the others, so it is likely that if they have no regular ettonne for the purpose, they use an

associated with enemy scalps in the keeping of the ApiLaciwwanni equivalent. The location of this, however, changes, just as the personnel of the two participants alters according to the happenings in their society, the Apitlashiwwanni, and not according to succession in a self-perpetuating body of priests. The present elder brother bow priest formerly "went in," with his colleague, in house 186, the home of his relatives; now he enters house 167, where he is married. Both these houses happen to contain other priestly ettowe. Should he remarry, he would no doubt "go into" his new abode; and his successor will do the same. Finally, the eleventh set of priests, who are officers of the Shuma'kwe fraternity, and whose ettonne seems to be the Shummeyekolli or Shumaikolli masks, "go in" at their fraternity headquarters; and this was recently moved from house 354 to 372.

The fraternity fetishes are kept in the fraternity houses, except in two cases mentioned in the foregoing list; and as several of these societies have changed location in the past generation, as discussed below, and probably all have moved at one time or another in the past, their ettowe cannot be regarded as more than temporarily fixed.

The clan ettowe, finally, appear to shift with still greater readiness. Number 42 was formerly in house 295. When this ceased to be inhabited, the fetish was brought to house 161. The shift of number 56 from 342 to 347. of 53 from 33, of 43 from 190 to 506 outside the pueblo, are similar cases. The transfer of the Turkey and Frog fetishes, numbers 46 and 49, was not even necessitated, for their old houses remain inhabited. The removal of number 50, the Coyote ettonne, is illustrative. It was in 373. Most the inhabitants of this house moved to 186, but an old woman remained behind. The reason that the Coyote ettonne was not brought into 186 is presumably that this was an original Sun house and still contains the Sun fetish, number 45. In 1915-16, however, the old woman in 373 died, and the house was sold by her descendants in 186 to Corn people. Thereupon Tsa'wela, of house 186 though married in 167, one of the leading men in Zuñi in virtue of his office of elder brother bow priest, as well as a member and officer of the Sanniakyakwe, deposited his clan ettonne in the house which harbors the latter fraternity, 347. Thus the Coyote ettonne now rests in a Yellow Wood house, merely because of the individual society memberships of a dominant personality in the clan.

The Chaparral Cock ettonne, number 55, no longer exists. This clan inhabits only one house. On the death, some years ago, of the brother of the old woman who is the matron of this house, the fetish was buried in the river. Were the clan actually on the point of extinction, this procedure would be intelligible. But the Chaparral Cock house contains women; and the death of its leading male member would not affect its vitality. The motive of the act thus remains obscure; but similar things are likely to have happened before. Compare the fate of the major mate of fetish 64.

On the other hand, a new expansion of this clan might lead to the making of a

new fetish — much as the Koyyemshi masks that constitute the equivalent or accompaniment of ettonne number 4 were re-manufactured a few years ago and the old set buried. In the same way, entirely new fetishes must have been made when the Chikkyalikwe fraternity split from the Uhhuhukwe, or the Peshatsillokwe from the Makkyete'annakwe.

A comparison of the clan memberships of the priesthoods in 1916 with those given by Mrs. Stevenson for 1896, shows many changes:—

		19	16							18	396		
1 (P)	P	P	P					P	Tk	P			Pφ
2	S	P	P	P				(P)	S	P	P		Pφ
3	P	Be	Ba	Ba	Ba	Ва♀	Ва♀	Ba	Ba	Ba	Ba		Ba Q
4	${f E}$	${f E}$	P	P	\mathbf{E}			${f E}$	\mathbf{E}	\mathbf{E}	\mathbf{E}		ΕÇ
5 (P)	P							P					
6	Сy	\mathbf{s}						${f E}$	Cr	${f E}$	\mathbf{E}		ΕÇ
7 (E)	${f E}$	\mathbf{Cr}	P	Tb				${f E}$	${f E}$	\mathbf{E}	\mathbf{E}		Εç
8	Ba	\mathbf{s}	P	(P)				P	P	P	P		Pφ
9 (Cn)	$\mathbf{C}\mathbf{n}$	${f E}$	\mathbf{Cn}					2Cn	C_n	M	Cn		Cn ?
10	$\mathbf{C}\mathbf{n}$	M	P	(P)		Pφ		*Ch	P	Cr	S		Mφ
11	Ba	$\cdot \mathbf{P}$				Pφ		S	S	S	S		89
12	₽P	Cr	Ba			Εç		\mathbf{Cn}	Cn	Cn	\mathbf{Cn}	Cn	
13 (S)	\mathbf{Cr}	P	8					\mathbf{Cn}	Cn	Cn	Cn		Cu &
14 (Cn)	2 Cr	Cr	\mathbf{Cn}	P				Cn	Cn	Cn	Cn		Cn 9
15	P	\mathbf{E}	Tk			Pφ							

From a statement of the order of retreat of the several priests given by Mrs. Stevenson for 1891,4 it appears that this is also the sequence which she has followed in her enumeration of the priesthoods themselves.5 As this is also the order in which the present priests are enumerated by me in Table 12, it follows that the two foregoing lists are arranged on the same plan. The discrepancies are so marked, especially toward the end, that it must be concluded that the Zuñi in twenty years have altered this plan, that is, that the priesthoods in 1916 no longer "go in" in the same sequence as in 1896 or 1891. That such change is actual, and not merely an apparent result due to imperfect information, is established by the fact that for the first ten of the fifteen priesthoods the order cited to me was really fulfilled during my residence in Zuñi in the summer of 1916.6 The precise changes,

¹ P. 167.

² Ky'annakwe.

³ Shuma'kwe.

⁴ P. 180.

[•] P. 167.

[•] The tenth or Kollowissi priesthood went in on August 10, the day of my departure from Zufi. I owe the following calendar to the pains of Mr. Leslie Spier: August 18, Cumakwe, number 12; August 22, Yattokyakwe, number 13; August 26, Towwakwe, number 14; about August 31, Lemalticillowa, number 15. This leaves set 11 unaccounted for; but I conjecture that their retreat began on August 14, which would yield the place in the series that informants had previously stated to me they occupied.

and their no doubt largely personal causes, would throw much illumination on the problem of how a complex organization is handled in fact in a "primitive" society; and I regret that I cannot follow the matter up. My own data are limited, and as Mrs. Stevenson specifies neither the fetishes, priests, nor houses involved, positive identification cannot be carried far and any exact comparison is impossible.

I am not clear whether my sixth group corresponds to Mrs. Stevenson's sixth or seventh or has no equivalent. As already stated, the two bow priest members of this set are priests only by courtesy; and their "going in" is wholly constructive. As the Zufii put it, they walk about, but are said to have entered. In Mrs. Stevenson's time, Naiuchi was elder brother bow priest, corresponding to my number 1 of set 6. He is evidently the Eagle head of her set 6, and his son Halliana the Crane clan first associate of the same group. In my list, however, Halliana is number 3 of group 7. I suspect that Naiuchi happened to be both head of a priesthood and head bow priest; and that the terms of his two "goings in" being consecutive, he perhaps served them concurrently, or at any rate without intermission, so that they seemed as one. This would account for my having one more priesthood than Mrs. Stevenson.

The first six sets of priests are te-k'ohannakwe, "day people"; the remainder te-kw'innakwe, "night people." My informants, none of whom were ashiwwanni themselves, in general denied that the six groups of day people were designated by reference to the directions North, West, South, East, Up, and Down, as stated by Mrs. Stevenson. I have no doubt she is correct. But her information is esoteric; mine reflects the appellations current among the people, with whom the activities of their priests are a subject of daily conversation.

In general, Mrs. Stevenson's data and mine differ on several points.

- 1. Her priesthoods consist uniformly of four male members.² Mine vary from two to five,³ the minority comprising four.
- 2. She cites a woman associate for every priesthood except the Pek-kwinne's and the twelfth.⁴ I was told of only six women in five priesthoods.
- 3. A majority of her priesthoods consist wholly of members of one clan; and none includes more than one associate of divergent clan.⁵ According to my list, nearly every priesthood is partly mixed as to clan affiliation, and several wholly so.



Mrs. Stevenson, p. 180, note a, merely states that "the elder and younger Bow priest also make a retreat at this season," i. e., while the sixth priest is in.

² The fifth, that of the Pekkwinne, is a specified and assured exception. For the first, she expressly mentions three incumbents and a vacancy. The twelfth comprises five males, but is exceptional in lacking a female associate.

Not counting sets 5 and 6, the Pekkwinne and bow priests.

⁴ Compare note 1.

Except the tenth, whose membership is determined by the extraneous consideration of whom the Shuma'kwe fraternity has elected to office.

Decadence of system will account for only part of these differences; and I doubt whether real breaking down has been operative at all. It is obvious that Mrs. Stevenson's list is far more regular at all points, and conforms better to some native theory.

SUMMARY.

It appears, then, that the clans of the Zuñi stand in relation to the various fetishes possessed by the nation. Probably through these fetishes, the several priesthoods are given considerable but variable clan coloring. The occasions on which clan ties enter into other tribal ceremonial are fairly numerous; but as for the fraternities, their membership as well as their ritual are practically free from any relation to clans, except in so far as choice of certain officers, and consequently performance of certain actions, is clan limited through associations between particular clans and the fetishes of the fraternities.

I believe that the foregoing facts bear out my interpretation of the Zuñi clan as a body of mildly social type with prevailing if not important ritualistic functions, these functions however being exercised by individuals in virtue of their clan membership and never by the clan as a body. It is also significant that in a considerable proportion of instances, perhaps one time out of three, it is not clan membership, but the clan affiliation of the father, that determines the choice of the individual selected for the fulfilment of a temporary or permanent ceremonial service.

RACING.

The Zuñi races or illuha (running), in which each side kicks a short stick or tikkwanne over the course, are of four kinds. The first race in spring, u'pawa, is a ceremonial competition run with six sticks, each kicked by members of one kiwwitsinne and painted with the color of the cardinal direction of that kiwwitsinne.\(^1\) Next follows a race in which the clans compete, annotiwe illuha.\(^2\) After this, racing is thrown open. That ill-defined body known as the Showekwe, or individuals among it, arrange races which are publicly announced, heavily bet on, and conducted with ceremonial observances.\(^3\) Finally, impromptu and informal races, usually

¹ Stevenson, p. 318.

² Ibid., p. 321.

^{*} Ibid., p. 322.

over a shorter course, are got up now and then by those whom desire of excitement impels.

In the clan race, there is a stick for each clan and sometimes for subdivisions of clans. A set of models of these tikkwawe made for me, are of the heavy assiye wood employed in all important contests, but unpainted. The bark is left on, except for a peeled ring in the middle; and near one end a rude design of the object the clan is named for is cut into the bark (Fig. 1). In addition, every participant has his back whitened, I was told, and a similar design is then made on it by erasure.¹ These are the only instances known to me of a pictorial or plastic representation of Zuñi clan totems.

GOVERNMENTAL FUNCTIONS OF CLANS.

The Zuñi civil government is accorded recognition by the Office of Indian Affairs, as it was likewise, probably, by the Spaniards and Mexicans; but gives every indication of being in substance a native institution. It is concerned mostly with affairs that relate to property, property rights, and equities in material things, both individual and communal. This is an interesting field of investigation, but, like the related one of Zuñi economic system, too special and intricate to be treated as a mere adjunct of customs of blood and clan. I will only say that so far as my experience goes, all property at Zuñi, including fields, corrals, houses, and personal effects, are owned by individuals or household families of blood kindred, and that whatever is not so possessed, such as streets, plazas, and wells in town, the ruin of the mission church and its burial ground, unused land, or game and wild growths upon it, are owned communally; that is, they are free to any Zuñi to enjoy the use of, and actual proprietorship is maintained only against aliens. This leaves nothing that can be considered clan property.

Analogously, the relations of the clans to the civil government are of the slenderest. The only points of contact of which I am aware are two. The governor and lieutenant governor are not chosen from the same clan, and the four or five aids of each, who with them constitute the civil council, are, at least in theory, also of different clans. Secondly, the choice of the officers is made by certain priests of certain priesthoods, which are, as already described, clan limited, or more exactly, associated with clans.

The governor is called either annula or tapupu. The former word seems to be Zuñi, the latter Keresan in origin. The lieutenant governor is the

¹ Mrs. Stevenson, p. 322, says that the clan symbol is painted on the breast, the paternal clan on the back. She also states that Pikchikwe runners bear the pattern of the dogwood bush plus a raven or macaw according to subdivision.

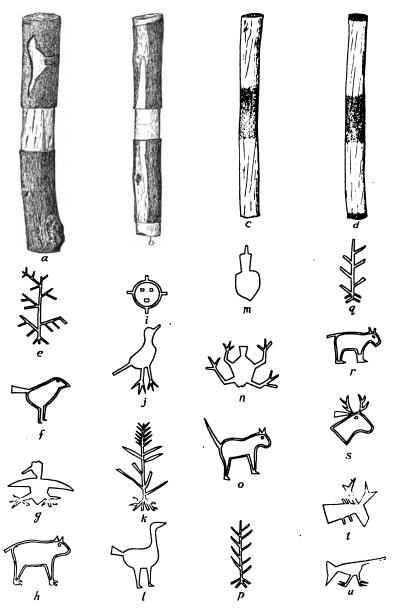


Fig. 1 (50.2-337 a-u). Sticks used in Annual Clan Race: a by Macaw division of Pikchikwe clan; b by Yellow Wood clan; c by older brother bow priest; d by younger brother bow priest. Patterns cut in other sticks: c Dogwood (Pikchikwe); f Raven (Pikchikwe); g Eagle; h Badger; i Sun; j Turkey; k Corn; l Crane; m Pumpkin (Crane); n Frog. o Coyote; p Tansy Mustard; q Tobacco; r Bear; c Deer; t Antelope; u Chaparral Cock.

tsippolowe-ciwwanni or "Mexican priest," that is, priest for the Mexicans. He has, in theory at least, a command of the Spanish language; is in special charge of all communal relations with Mexicans; and it is his duty to see that no Mexican witnesses a dance. The aids or deputies are known as tinniante, plural tinniantekwe. This sounds like a good Zuñi word, but Mr. F. W. Hodge informs me that it is in general use among the Rio Grande pueblos, and undoubtedly the Spanish teniente, deputy or lieutenant. The generic name for all these officers is yannula, plural yannulakwe.

The officers in the summer of 1916 were these:

1.	William F. Lewis	Govern	or		Crane clan, child of Badger
2.	Dick	Lieuten	ant	Governor	Corn clan, child of Bear
3.	Wahkanniwa	Deputy	to	Governor	Sun clan, child of Pikchikwe
4.	Osti	"	u	"	Corn clan, child of Badger
5 .	Pilla	u	"	u	Badger clan, child of Pikchikwe
6.	Attets'anna	ű	u	u	Pikchikwe clan, child of Badger
7.	Si'utsa	u	"	u	Corn clan, child of Pikchikwe 1
8.	He'yo	ű	"]	Lieutenant	Sun clan, child of Pikchikwe
	•		(Governor	•
9.	Mu'tu	u	"	u	Badger clan, child of Turkey
10.	l'ts'eya	"	u	«	Badger clan, child of Crane
11.	Wi'akwe	u	u	u	Turkey clan, child of Corn

It will be seen that the governor's aids include two Corn clan men, and those of the lieutenant two of Badger clan, so that personnel appears to count for more than clan affiliation, in practice. In general, however, the officers are adequately apportioned to the larger clans.

Old men say that when they were boys, or about fifty years ago, the council comprised only six officers: the governor, the lieutenant governor, a pekkwinne or speaker for each, and a we'aconna or public crier for each. The growth of the council from six to eight and then to ten is laid to increasing relations with Mexicans and Navahos and more extensive scattering of the Zuñi to their three farming districts. This explanation seems to me not wholly valid. But the tendency toward augmentation persists. It is evidenced by the present fifth aid to the governor, as well as by the abortive addition of a sixth. A year or two ago, one of the governor's deputies was chosen to impersonate Hututa, one of the more sacred of the gods. This obligated him to abstain from all quarrels or disputing. He continued to attend council sessions, but without entering into arguments. A substitute, or to speak more exactly, an additional councillor, was "therefore" appointed, to have special charge of the maintenance of irrigating ditches at

¹ Theoretically supernumerary. He was added in the temporary absence of Wahkanniwa, but proving eminently satisfactory in the position, was retained after the latter's return.

the Ojo Caliente farming district. The new nominee died within a month, and no successor to him was chosen. It is said that had he lived, both he and the Hututu impersonator would probably be councillors now.

It may be added in passing, as a matter of wider interest, that the Zuñi in their civil council adhere to the universal Indian principle that no decision is arrived at until complete unanimity of opinion, or at least of expression, is attained. I have the impression that this principle is prevented from degenerating into paralyzed inefficiency by a strong impulse to defer to general sentiment. A fractional minority may voice its opinion at the outset, but will not directly press its contention once the tide has definitely turned against it, no matter how grave the issue; so that in practice the requisite unanimity is almost invariably obtained.

At bottom, Zuñi government is theocratic, the civil officers being chosen, and if necessary deposed, by the highest priests. Mrs. Stevenson speaks of these as "the first body of Ashiwanni" and makes it to be constituted of "the six Ashiwanni directly associated with the six regions, the Shiwanokia (Priestess of fecundity), and the elder and younger Bow priests, the two latter being Ashiwanni ex officio." My informants restricted the appointing body to the head priests of the first four priesthoods, except that from the first or Akyakkwamossi priesthood two associates are included with the head; and sometimes added the older brother bow priest, who is the sontalu (Spanish, soldado), the executive or military arm, of the priests. I am uncertain whether the bow priest has an official voice or only influence; I suspect the latter. The six priests who held this office in 1915 were numbers 1, 2, 3 of set 1, 1 of set 2, 3 of set 3, and 1 of set 4, as listed in Table 12.2

As regards the discrepancies between Mrs. Stevenson's "first body" and mine, I cannot believe that the Shiwwannokkya — the word means "old woman priest" or "priest old woman," and contains no reference to fecundity — had an official seat as a member of the body. She undoubtedly possessed such influence as her position as associate of the highest priesthood would command when joined to the requisite personality. But it appears to me thoroughly incompatible with everything I know of the Zuñi that they should admit a woman to an avowed place in this august body. The position of their women is always ancillary in religious organization — as in the priesthoods and fraternities; and that one of them should be received into the theocratic council when it meets to regulate secular affairs, appears to me as incredible as that a woman should be seated in the civil government. Mrs. Stevenson's work frequently displays distinct feminist trend when it deals with the participation of the Zuñi woman in religious system rather than with her actual status in



P. 289.

² I do not know why in the third priesthood an associate replaces the head. Perhaps he is the former head; or the hereditary one — he was born in the house in which the fetish of his priesthood is kept.

daily life. If the female associate of the first priesthood were so important, it is hardly likely that her place would remain unfilled at present.

The pekkwinne, corresponding to Mrs. Stevenson's priest of the fifth direction, does not have a hand in the selection of officers, the Zuñi told me, because he is expected to devote himself so thoroughly, in thought as well as acts, to his high and consequential religious duties, that he holds aloof from all secular matters.

As to the priest of the nadir, the sixth direction, it has already been mentioned that the incumbent cited by Mrs. Stevenson was also older brother bow priest — just as at present the two head bow priests "go in" in sixth place. Six priests plus two bow priests plus the "Priestess of Fecundity" makes the "eight men and one woman" of Mrs. Stevenson's "first body." But since the sixth priest and first bow priest were the same person in her time, the actual number would have been seven. There must be an error in the reckoning.

On the other hand, I suspect that Mrs. Stevenson is right in including the younger brother bow priest with the older, so far as the latter may pertain to the body. The Ahhayuta, whom the two head bow priests represent on earth, are always described as twins. It seems likely to me that my usually hearing only the older brother bow priest mentioned in actual affairs in 1915 and 1916, is due to one personality overshadowing another.

Two distinct general considerations follow from what has been said.

First, since the source of all Zuñi authority, sacred and profane, lies in certain priests; since these are representative of their priesthoods; and since these priesthoods, in native opinion, receive their origin, venerability, permanence, and even name from the ettowe with which they are associated, the depth to which these fetishes underlie all Zuñi life becomes once more apparent.

Second, the distribution and balancing of civil offices among the clans is characteristic of Zuñi procedure. A particular priesthood or ceremonial function may be limited to members of a particular clan; but the total dispositions as to government evince a feeling for an approximately equal representation of each clan in public affairs, or at least a representation roughly proportional to its numerical strength. Once more we gain the conviction that the Zuñi view their clans not so much as essential units of consanguinity or locality which are conglomerated into a mass while retaining their separate privileges and activities, but rather as coördinated divisions, with special but parallel and equivalent functions in a communal entity.

For the choice of the word "equivalent" in the last statement, I am indebted to Dr. A. A. Goldenweiser. It appeals to me strongly that the

¹ An exact resolution of the differences between Mrs. Stevenson and myself on this point is impossible at present because her priesthoods are designated only by directions, whereas my informants insisted on denominating them otherwise. I noted only one exception. A member of house 387, in which the third or Onnawa priesthood retires, told me that there were four sets of priests for the four — not six — directions, and that those of this house were of the South.

crux of the whole question of what a clan really is, rests in the contained idea. If clans were or had once been separate units, they should possess unequal privileges and different functions, like castes or classes or guilds. Now the overwhelming rule is that they do not exercise distinct functions, but essentially are equivalent. The only alternative interpretation remaining is that they once were separate bodies but that since their union an equivalating tendency has assimilated them. But, once an equivalating tendency is posited, there is no valid reason, in fact it is gratuitous and arbitrary, to assume that the tendency is only late and secondary; and if it be granted that the tendency is old and primary, there is no logical need for bringing originally distinct clan entities into the argument at all. All that remains to be accounted for is the inclination toward subdivision; and this seems to me to present no difficulty wherever the impulse to systematization, as evinced for instance in secret societies or the Zuñi priesthoods, is present in any strength. It is not even necessary to fall back seriously upon local groups, blood groups, or nicknames. A tendency toward systematization might more or less temporarily make use of such accidental or extrinsic groups as a starting point, and the differences of clan organization among various nations may well in part be due to the diversity of such associated phenomena. But, given the systematizing and coordinating impulse, nothing else is required: it would seize upon the most trivial suggestions and break itself a channel of its own. This is not the place for an exhaustive theoretical discussion; but it is to be hoped that Dr. Goldenweiser will not fail to present at length his happy and fruitful formulation.

PLACE OF THE CLAN IN ZUÑI SOCIETY.

It is impossible to proceed far into the complexities of the social and religious organization of the Zuñi without being impressed with the perception that this community is as solidly welded and cross tied as it is intricately ramified. However far one form of division be followed, it branches off by innumerable contacts into others, without ever absorbing these. Four or five different planes of systematization cross cut each other and thus preserve for the whole society an integrity that would be speedily lost if the planes merged and thereby inclined to encourage segregation and fission. The clans, the fraternities, the priesthoods, the kivas, in a measure the gaming parties, are all dividing agencies. If they coincided, the rifts in the social structure would be deep; by countering each other, they cause segmentations which produce an almost marvelous complexity, but can never break the national entity apart.



Let us take an individual in this society. First to him as to us, in time and probably ultimately in importance, are the ties of blood and of household association. But, basic as these are, they are scarcely organized into a definite pattern: the personal element still outweighs the institutions. But beyond is the clan, into which the Zuñi is born. It includes half his kin, indeed, but only half; and it includes a large group of persons outside the lines of blood. The clan, in turn, is more or less associated, directly or through certain fetishes and the houses that hold them, with certain priestly offices. Our Zuñi may become a priest of a fetish connected with his clan; or, through kinship running counter to the clan scheme, or through mere personal selection, he can be made a member of a priesthood not connected with his clan. If, as is still more likely, he is not a priest himself, he is almost certain to possess a relation to certain priests through the medium of clan and to others through kinship. His kiva is one of six that perform the outward ritual of which the priests hold the more sacred keys; but there is no connection of personnel between kiva and priests. Our individual is a member of the kiva to which the husband of the woman belonged who first touched him on his entrance into the world. Thus father and son, mother's brother and nephew, the several associates of one priesthood, co-members of a fraternity, are likely to pertain to different and more or less rivalizing kivas. The fraternity is entered occasionally by choice; usually by the affiliation and consequent predilection of the near relatives who summon its medical assistance in case of the individual's sickness. The racing and gaming parties are little known; but everything points to their being in the main independent of every other mode of organization.

Opposed to this actual Zuñi condition, is a putative type of social organization which has sometimes been ascribed to the Pueblo Indians and more often implicitly assumed for them — and the same is true of primitive nations in other parts of the world. This hypothesis predicates that a group of kinsmen, whom we may call A, originally from a locality A, now constitute clan A of their tribe; and that, essentially if not wholly, they compose the membership of secret society A, of priesthood A, and of club or kiva A. Such a system could be diagrammed as in Fig. 2. The organization actually found at Zuñi, however, differs at every point. There is no evidence that the members of clan A have come from a separate locality A. They comprise the kin groups a, b, c, d; they furnish members to fraternities A, B, C, D, to the priesthoods A, B, C, D, and to the kivas A, B, C, D. Thus a given individual of clan A may be of kin group b, father's clan C, fraternity D, priesthood E, and kiva F; his next clan mate that we encounter, will be perhaps of blood group d, father's clan E, fra-

MN A	LOCAL GROUP A	CLAN A	SOCIETY A	KIVA A	PRIESTHOOD A
KIN B	LOCAL GROUPB	CLAN B	SOCIETY B	KIVA B	PRIESTHOOD B
KIN C	LOCAL GROUP C	CLAN C	SOCIETY C	KIVA C	PRIESTHOOD C
KIN D	LOCAL GROUPD	CLAN D	SOCIETY D	KIVA D	PRIESTHOOD D

Fig. 2. Hypothetical Scheme of Zufii Social Structure.

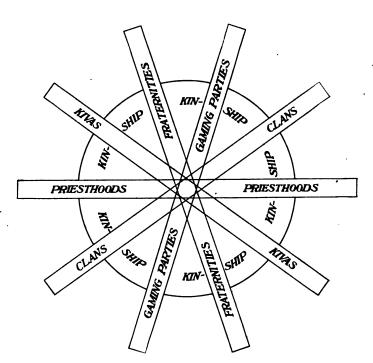


Fig. 3. Actual Scheme of Zuñi Social Structure.

ternity F, priesthood A, kiva B. By the time the tribe has been gone through, every clan, society, priesthood, and kiva is thus likely to be connected, in the person of one or several individuals, with every other, and each with each in about equal degree; but — and this is the significant point — the connections are almost wholly through individuals as individuals, and with reference to the national organization as a solidary scheme. Connection between group and group as such is always faint, often lacking; the plan of the fabric throughout seems calculated to avoid it. Fig. 3 may serve to contrast this Zuñi type of social structure with the previous hypothetical one.

It cannot be denied that the various forms of bodies — clans, societies, and the like — do have definite contacts. They could not co-exist within the same culture without maintaining relations, and these relations may now and then lead to a partial identification or a temporary coincidence. In the preceding pages I have piled up every possible case of bond between clans on the one hand and the various religious organizations on the other. It would be as unwise as unfair to deny significance to these contacts. But, bulky as my list of instances may seem, it comes only to a minute fraction of the potential cases. The actual contacts of the clans with the societies, bodies of priests, kivas, and other forms of religious machinery, are vanishingly small as compared with the total surface which this machinery exposes. On this point there can be no question. Let the reader compare the vast and intricate religious organization presented by Mrs. Stevenson, often in the most summary fashion, with my minutely analyzed but after all poor and scant lists of all cases where the clans stand in relation to this organization, and the slenderness of the rapprochements to the total bulk is overpoweringly evident.1

As a matter of fact, then, we have only relatively few of the potential instances of relation between the various types of Zuñi social and religious organization actualized. As regards interpretation, two alternatives are before us. We can look upon the occasional relations as the significant points, as the original nuclei from which all the remainder of the structure emanated as a meaningless growth. Or, on the other hand, we can look upon the large outlines and grand diversifying currents of the existing plan

¹ An interesting parallel, which merits exhaustive inspection, is the relation of the fraternities to what I have called the tribal religious organization. That a considerable number of cases of such relation exist, is clear from Mrs. Stevenson's work. An extreme instance is the constitution of the officers of the Shuma'kwe society into a recognized priesthood. To ignore such facts altogether, would be unwarrantable. But they acquire meaning just in proportion as they are seen to be irregular or unusual; in other words, in proportion as the basic gap between fraternal and tribal organization is clearly and justly recognized,—as I am of the conviction that it was recognized by Mrs. Stevenson, although her formulation thereof lacks the explicitness and emphasis that it might have had.

as basal and significant, and attach to the minor cross links between them only such weight as the exceptional always deserves.

It remains to inquire the motives that have led to the frequent choice of the first alternative, even more, perhaps, in ethnological works of a general character, then in studies dealing with the American Southwest. I can conceive three.

One is the instinctive inclination of the immature and unschooled mind to find attraction as such in the singular, the unexplained, and the mystifying rather than in the correlated.

Next, and more specific, is the tendency, already commented on, to assume that the past must have been not only different from the present, but contrary to it. What is now exceptional was once regular; what is vestigial, must have been not merely functional, but of primary functional importance; what is now consequential, must have been inconsequential or non-existent. It is clear that once this method of interpretation is adopted, it can be eternally applied without let or hindrance. Every irregularity, every subsidiary feature even, can be construed as a survival, and every survival as evidence of a former different plan, much as the mythologizing Indian concludes that because rivers now flow downstream, they must in the beginning of time have flowed up; and every eddy is there as a proving survival.

As a third motive, I would assign intellectual sloth. If every society, club, priesthood, and civil office can be resolved into a clan or function of a clan, and every clan into a group of kinsmen or coinhabitants, as simple a scheme is attained as it is possible to devise. Where we can postulate coincidence, we are freed from the obligation of examining subtle and varying relations. It is as if we could reduce cylinder, piston, valves, rod, intake, exhaust, and regulator of an engine all to the formula of a tube: the machine would be endlessly easier to picture and conceive. Whether it would run, can unfortunately not be put to the final test of practical application in a descriptive science like ethnology, so that any undiscriminating mind remains at liberty to proclaim its formula of the tube to other minds that abhor the exertion of discriminating, without being reduced to the confusion of obvious exposure. As a matter of fact, however, it requires only a low degree of intellectual perception to realize that a social machine constructed on the simplified parallel and coinciding plan of Fig. 2 could not work. Not only would a community organized on this scheme inevitably break apart; it would never be a community; just as a series of organs, each of which performed all the functions of all the others, would constitute as many individuals, and not a single one. A small amount of reflection shows that the interwoven structure of society illustrated by Fig. 3, or some considerable approach thereto, is a logical necessity.



The size of the Zuñi community, and its reduction to a single pueblo, may have caused its social fabric to be more intricately knit than usual. But the relations of all the Southwestern tribes are so intimate, that it is practically certain that the main features of the plan of Zuñi society recur among the other Pueblos, and in large measure even among the so-called nomadic peoples. As regards more distant nations, whose historical connections with those of the Southwest are remote, such inferences cannot be drawn; but the theoretical considerations adduced compel the conclusion that however different the strands or elements of their societies, the interrelations of these elements must be in some measure analogous to the interrelations which the elements of Zuñi society manifest.

IV. THE TOWN.

In order to ascertain the distribution of clans in Zuñi, it proved necessary to make a new survey, the detailed results of which are shown in Map 6. The town has altered in too many respects since 1881 to make Mindeleff's excellent plot of that date serviceable at present. Moreover, experience proved informants to be very inconsistent in placing families in the past. One man thinks of conditions twenty years ago, another of a period twice as far back. Even the same informant is likely to have different times in mind as he progresses from one part of the map to another. Finally, so many families have moved from old Zuñi to entirely new homes in the immediate environs, that the locational relations of more than one third of the population could be determined only by means of a new map.

Such a new plot seemed worth while also because it would show in detail changes in the shape of the town and would reveal its process of growth during a generation. I tried, but soon abandoned the attempt, to draw over the Mindeleff map to conform with the pueblo of 1915. Superficially, the old map and the new are remarkably alike; but the vast majority of exterior lines and many of the interior lines have been altered, at least by a few feet and often by much more.

Finally, the new survey gave an opportunity of introducing elevations, which are not indicated in Mindeleff's survey. Mindeleff does show by shading three or four levels of stories. At first glance, this appears much the most satisfactory, because the most conspicuous method; but it is entirely inadequate for detailed service. Rooms are of very different height, so that adjoining two story and three story houses sometimes are of nearly the same elevation, even when they are built upon the same foundation. Where the ground slopes, as it does over a great part of the pueblo, the roof of the house with fewer stories may actually be above the one with more stories. There are also many cases of roof levels being separated by about half the height of a story, even within the limits of one and the same house.

The only accurate method of recording elevations seems therefore to be by the entering of absolute figures related to a fixed base. It would have been of the greatest interest if these could have been supplemented by an indication of the number of stories under each roof. This, however, proved impossible. The Zuñi regard their roofs as public highways, and were entirely indifferent to a survey being made. Their homes, on the other hand, they feel to be private, and any attempt to enter all the inner

and lower chambers at will would be impossible, except upon the exercise of authority, backed by force. They are generally ready to tell the number of rooms which their house contains and the number of stories to which it descends; but the magnitude of the town, and the involved expenditure of time, precluded this method being attempted on any general scale.

THE SURVEY.

The survey was made for me in 1915 by Mr. Mark Bushman of Gallup. The first step was to locate certain fixed points which would correlate the new survey with Mindeleff's map. The highest roof in Zuñi, the kyappachunna, from which the councillors make public announcements, was definitely placed on the Mindeleff map by measurements and by a line run from the head or south end of the K'ochina plaza (the court entering the main block from the north), to the head of the right-angled alley which penetrates the same block from the south. In Mindeleff's time this high level appears to have included a number of roofs. At present, it covers merely one small room which looms an entire story above the surrounding ones. A spot near the west end of this roof was designated as point X.

Certain house corners and fixed points, mostly on the exterior lines of the pueblo, were then found, whose appearance would indicate that they had not been altered since the day when Cushing first came to Zuñi. Only such of these points were used as the lieutenant governor, an elderly man, stated positively to have undergone no change. These points have been designated as stations A to I.

From point X, the distance, direction, and downward angle of every corner and jog of the exterior line of the main or northwestern block were read by transit and stadia wires on a thirteen foot rod and then plotted to the computed scale of the Mindeleff map — 43 feet to the inch. The outlines of the smaller southwestern blocks were also obtained from X. This point was then connected by triangulation with Y, on the highest roof in the southeastern block, and with Z of the highest roof of the northern block. From Y the exterior angles of the three eastern blocks were sighted and plotted, and from Z those of the north block. The magnetic deviation assumed was that of Gallup, 13° 20' east. A subsequent solar observation indicated about 14°. It is therefore possible that the arrow on the map points from one half to two thirds of a degree east of true north.

With all the exterior lines of the seven blocks of the pueblo proper plotted, the interior walls were obtained with a steel chain and entered on the plot, affording at the same time an opportunity to check the instrumental results. Mindeleff states his survey to have been made primarily with a compass and a tape.¹ On the whole, I believe this method to be the more accurate, but it must also involve very much more time. The ideal procedure probably is to work by instrument and with a tape at the same time, utilizing the results of each method to check the other. My experience, however, leads me to estimate that a period of at least a month, and perhaps considerably more, would be required for an accurate survey of Zuñi made in this way by an observer competent to use a theodolite or a plane table and operating with an assistant. As Zuñi is by far the largest of all existing pueblos, this method may however be much more readily applicable to surveys elsewhere.

I have also made no attempt to indicate the deviations from straight lines that characterize many Zuñi walls, but have merely drawn a line between every two corners. Here again, it is not that the results would have been unimportant, but that time was not available. Many Zuñi walls are still somewhat curvilinear. On the whole, however, the town is now laid out on more rectilinear lines than in 1881. The newer and larger houses, in particular, including most of those that face on streets or plazas or the exterior of the pueblo, have substantially straight walls. Some of the building that was observed was freehand, but in other cases, as in the reconstruction of the Chuppawa Kiwwitsinne, the greater part of whose new walls was erected during the summer of 1915, a string was stretched and the wall run perfectly true. This is seemingly not only an innovation, but a recent one.

In a few cases, rooms are probably more rectangular than they appear on the map. This statement applies particularly to several houses or rooms in the interior of the main block; whose diagonal shape is, at least in part, due to the surveyed exterior lines of the block not tallying exactly with the interior measured ones. In this class are rooms 100, 99, 114, and 60. Most of these are either roofless ruins or standing houses adjacent to tumble-down structures whose accurate survey is particularly difficult.

The elevations were obtained by running levels or laterals by instrument to some seventy selected points, mostly on the ground, but to the number of about twenty at roof corners. These have all been computed and entered on the map with reference to a United States Topographic Survey bench mark, 6281 feet above sea level, reckoned as zero. Elevations below this are designated as minus. This bench mark is just outside the limits of the large map (number 6), but will be found indicated in Map 7 in front of house 534a, to the northeast of the town. All the elevations obtained instrumentally are underlined on the map.

¹ Bur. Am. Ethn., Ann. Rep. viii, 44, 1891.



All other elevations were subsequently obtained by the writer by means of a rod, and computed with reference to those instrumentally determined. All these are given without underlining.

All levels have been reduced to the nearest foot or half foot, the latter indicated by a dot after the number.

There are three levels of importance, besides the bench mark, that barely fall within the frame of Map 6. The bridge which crosses Zuñi River somewhat south of the southwestern corner of the pueblo has an elevation of $-13\frac{1}{2}$ feet at the northern end of its floor. The bed of the river immediately below is $-21\frac{1}{2}$ feet. North of the village is a large well, still the principal source of water supply for the greater part of Zuñi, and shown on Map 7. The northern rim of this has an elevation of -7 feet, while it is 14 feet farther to the water level, or -21 feet in all. This makes the water in this well of substantially the same level as the water running under the bridge, and no doubt somewhat below the level of the river a few hundred yards farther up near the eastern end of the town. It is therefore likely that this well is not actually a spring, as it is sometimes called, but that it is filled by direct seepage from the river which passes deep under the town. This fact would explain the apparent purity of the water, which at first sight seems remarkable in view of the well being situated practically at the foot of the largest garbage pile of the several that surround Zuñi.

The smaller scale map, number 7, showing the newer and often detached outlying houses within a quarter of a mile of the old pueblo, is based on sights, obtained as before, from points X, Y, and Z, according to the position of these houses. One corner only of each house or block of houses in these suburbs was sighted and entered; and from this corner each house was subsequently plotted on the basis of measurements with tape and compass. The pueblo proper on this map is merely a reduction from the large scale plot of Map 6.

To prevent error, it should be stated that the so-called scalp house or shrine in which scalps are preserved was said by my Indian informants to have been moved in recent years from a position some 200 yards nearer the town than it now occupies.

Mr. Bushman also obtained for me the following readings taken from point X:—

The main building of the Black Rock Government School lies 68° 30' east of north. The shrine on the summit of the ruin Mattsakya, 86° east of north. The southern pinnacle of Towwayallanna, 71° 30' east of south. The shrine south of Pinnawa, 60° 40' east of south. The shrine Heppatinna, a short distance across the river, 29° west of south.

Nearly every Zuñi roof possesses a slight pitch and not infrequently the slope from one edge to another amounts to a foot or more. This is particularly the case over large rooms or where several houses happen to have their roofs without any step between them. In general, the figures given for roof elevations must therefore be taken to apply only to the portion of the roof in which they are entered. This circumstance also accounts for the fact that adjacent roofs whose given levels differ by as much as a foot have sometimes been connected by a double-pointed arrow to indicate that the roofs are flush along their line of contact.

I should have very much liked to delineate in full the contours of the ground upon which Zuñi is built, but was forced to abandon this intention because of the time it would have required. The highest unbuilt point on the knoll, designated as W, is a little over twenty feet above the bench mark base, or somewhat more than forty feet above the present river bed. This high point is a little north of the northern edge of the north block, near where the crumbling adobe base of an old outhouse is still discernible. From near this point the ground falls sharply to the north about twenty-five feet. This northern face of the knoll is one of the principal places of disposal of refuse at present.

After the alley which separates the northern from the main or north-western block has been entered, the ground slopes upward until in the corner of K'ochinawa or Rat plaza an elevation of over twenty feet is reached. In Mindeleff's map, the southern wall of this K'ochina court was continuous. At the present time it is broken through and opens into another, apparently nameless, court to the south. The slope still is upward as one goes farther into this court, until an altitude of twenty-eight feet, or nearly fifty feet above the river bed, is reached. This court is however said by the Indians to be well above ground level. When the houses that formerly occupied this area were abandoned and pulled down, their lower two stories, or possibly in some cases three, were filled in, presumably because this was an easier procedure than removing the entire content of their walls. This high level is therefore distinctly an artificial one.

A similar proceeding is often employed in the case of the lower rooms of bouses that are left standing and inhabited. Inner dark chambers are less, used than formerly, now that the people have become accustomed to doors and windows. In addition, it is likely that added stability was given to the upper stories of a high house by sinking its lower story completely in made ground. Part, if not all, of the foundations of house 163a have been filled in in this way.

It is likely that this was an old procedure. The streets and courts of the town gradually rose from the accumulation of refuse, the wash from earth roofs and mud plaster walls, and the blow of sand and dust, until chambers that originally were level with the ground became partly or wholly subterranean. New stories were reared upon the old walls and the lowest floors filled in even before the modern reconstruction of the town began.

CHANGES.

The rapidity with which a pueblo like Zuñi changes in detail, while preserving the same general outline and appearance for generation after generation, is really remarkable. I have already alluded to the surprising similarity of my map to that of Mindeleff, in spite of the fact that only two thirds of the population remains within the old town limits, and that certain minor discrepancies have been produced in the maps by the difference in the method of surveying. This general conservatism is however offset by the readiness with which changes of a few feet are made in the lines of any particular house. Mr. Bushman's survey was begun on July 13 and the plot finished on July 19, 1915. The same night there was a rain which was followed by several others. My last observations on the town were made on August 8. In the scant three weeks' interval, at least half a dozen houses had fallen or had been torn down.

On August 8, for instance, the wall between rooms 13 and 10 in the main block was being rebuilt. This had given every indication of having been untouched and abandoned for some time previously. The upper story of room 46 in the same block fell in a rain of August 7. The débris was being removed on the following day. The new roof on this house would therefore henceforth be level with the adjoining houses 45 and 48 instead of rising above them a story. Rooms 62 and 63 had, on August 8, been torn down since the survey was made, and 62a was actually in process of demoli-143, which had stood as an unroofed ruin since the time of my advent to Zuñi, was on this same day being rebuilt. What remained of the walls had been thrown down and a new foundation was being laid. This foundation however extended north to meet room 141, obliterating the small alley which at the time of my survey, as well as in Mindeleff's day, separated these two rooms. The fixed point A which I was still able to use in my survey is therefore now also a matter of the past. Room X157, also in the north block, had been torn down since July 19 and was being rebuilt along what appeared to be the lines of a still earlier structure on the same site. The present X157 is therefore considerably broader and slightly less deep than the one that stood until July, 1915. In the northeast block, room 327, serving as a storeroom to the family in 328, collapsed during a heavy rain. 327a was an older room of which nothing but the foundation remained. This had been excavated and stone for its reconstruction had been lying piled up for some time. On the collapse of room 327, it was completely torn down and the construction of a larger 327a, to include not only its old area but that of 327 without partition, was commenced, and had made considerable progress by August 8. In the southwestern part of the main block, the roof of 128 had suffered damage in the storms following July 19 and was being taken down to prevent its collapse. It was stated that this roof would not be replaced. In the southeastern block, rooms 399 and 400 were ruins when the survey was made. Early in August, building was going on in them. The walls had been brought up to a height of 10½ feet and it was stated that the roof was to be nearly up to the level of that of the adjoining rooms, 395, 401, and 405.

The following are a few of the alterations which were made between August, 1915, and July, 1916, and which therefore represent further changes from Map 6. Room 42 has become roofless. The front of 120 is several feet farther back, and only partly reconstructed. Room 61 is a gaping hole, into which rubbish is being thrown. 62, 63, 64 are level with the ground. 62a in July, 1916, was a hole five feet deep across which stretched the bare rafters of the former ceiling, their tops at an elevation of 22 feet. In August the rafters had been removed, the bottom of the hole was cleared, and the west wall of 55 had been torn down and was being rebuilt in adobe. Where 63 had been, stones had been piled for building a new room or wall. Most of the rear or west wall of 181 is broken down, although the room is still inhabited. 143 is rebuilt and inhabited. It extends to the south wall of 141, and its roof is level with that of 141. 158 in July was a roofless ruin. In August it had been broken down, but the southern part of previously ruined 157 was being rebuilt. The southern half of 376 was completely removed in July. By August, the northern half had been restored, and was inhabited by the new occupants of 373 and 374. The roof of 256 was being torn down, in order to be rebuilt. The fronts of 391, 397, and 398 have been brought out into a continuous line with that of 406. Sha'lako had been held in two of these houses during the winter. I have no doubt that exact examination would reveal at least a dozen other alterations of the same kind, besides new building in the environs.

There is a special factor of importance making for alteration. This is the custom of improving and, if possible, rebuilding one's house after one has been designated one of the hosts of a Sha'lako god in the great December ritual. People apparently vie with each other to make their houses as imposing as possible on this occasion, and the result is that every year the front or main living rooms of eight 1 different houses are with few exceptions pulled down to be rebuilt on an enlarged scale. The degree to which this custom leads to alterations has possibly been intensified in recent years. Under present conditions, the feeling is of sufficient strength to bring about that the exterior walls of nearly every house in Zuñi are altered in the course of thirty or forty years.

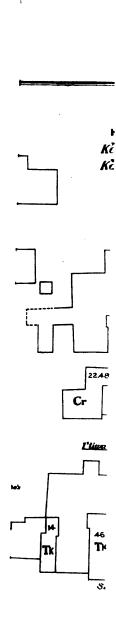
¹ There are six Sha'lako gods, but eight houses are rebuilt. Stevenson, p. 227.

CHANGES IN RELIGIOUS STRUCTURES.

Even religious structures are not exempt. Of the six kiwwitsiwe or kivas, three are no longer standing where they stood in 1881. Ohhewa is shown adjacent to the east end of Upts'annawa in Mindeleff's map. It was subsequently rebuilt south of the church and main plaza on ground that had formed part of the house of the Komossonna or dance director. Hekkyapawa was recently re-erected in part on the old site, but made to project farther west. As a result, its main axis is now from east to west like that of the other kiwwitsiwe, instead of forming an exception in extending from north to south. Chuppawa was non-existent as a building on my arrival in Zuñi in June, 1915. It had stood at the corner of the alley separating the main block from the southwestern one, leaving a narrow passage way; a turn had to be made to reach the west end of the one remaining tunnel in Zuñi which marks the junction of the main and the southern blocks. As all the houses adjacent to old Chuppawa had been torn down, it was decided to move the ceremonial chamber and place it farther north. leaving a wider and more convenient thoroughfare. No doubt this change also gave opportunity for a larger building. At the time of my arrival and for some weeks thereafter, one of the women from the neighboring houses had a bread-baking oven on the spot selected for the new kiwwitsinne. In July, the ground was cleared, the foundations outlined, and work began. By August 8, the walls had risen nearly to their full height. In 1916 the chamber was in use. Muhhewa kiwwitsinne is said not to have altered for many years. He'iwa has been rebuilt and slightly enlarged, but remains on the same spot as in Mindeleff's day. Upts'annawa appears to have been somewhat enlarged when adjacent Ohewwa was removed. These changes in the kiwwitsiwe are shown in Map 8, which records features of religious moment in Zuñi life.

This same map reveals a like readiness of the Zuñi to shift their fraternity headquarters when there is occasion. Mrs. Stevenson says that according to Zuñi theory each of these religious bodies has met in the same house since the time of its foundation. I have no doubt that the Zuñi make such statements, but they are certainly schematic expressions to which the people are aware that their practice furnishes exceptions. Seven of the thirteen fraternities have been moved to other houses in recent years.

The Sanniakyakwe first moved from the destroyed Eagle house 407 on the south side of the southeast block to a free Pikchikwe house directly south. The man of this house was out of 407. Recently they moved again, to Yellow Wood house 347 on the north face of the northeast block.



The Uhhuhukwe were not far away from the Sanniakyakwe, in Sun house 446. Not long ago they transferred their headquarters to the Pikchikwe house 54 on Ts'i'a'wa, the so-called Sacred Plaza. This is the only case of a move between the eastern and western halves of the town.

The K'oshikwe have moved from Tansy Mustard house 159 to Pikchikwe number

1. These are on the northern fronts of the north and main blocks respectively.

The Ne'wekwe transferred their seat from Bear house 235, now ruined, on the south side of the south block, to Pikchikwe house 7 at the northeast corner of the main block.

The Apitlashiwwanni or bow priests formerly met in Pikchikwe house 360. This stands but is uninhabited. They now have their headquarters in the adjacent Pikchikwe house 357, which faces north instead of south in the same block.

The Shi'wanakwe, once in Pikchikwe house 96 in the main block, are now in Pikchikwe 268 on the south front of the south block.

The Shuma'kwe formerly adjoined the Apitlashiwwanni in Crane house 354. Their head was a young man of this house. Some years ago there was sickness in the pueblo; this youth was accused of witchcraft, and intimidated into a confession. Sentiment ran high against him; and while the Zuñi no longer hang their convicted or confessed witches, owing to examples made by the federal government, the young man stood in serious danger of losing his life privately, or at least of severe maltreatment. The agent intervened diplomatically by putting him to work at the Black Rock school, until excitement had somewhat subsided; and he is now again a member of the community, although more or less shunned by all except his blood kin, who believe him innocent. He was promptly deposed by the Shuma'kwe, who abandoned even his house, moving four doors to the east into Eagle house 372. The same sort of thing obviously could have happened in ancient times, and probably did, now and then.

It is clear that the Zuñi reveal the same impulse in moving their fraternity headquarters as their residences: they tend to preserve the location in the original quarter of the town.

The status of the fraternity houses appears to have no exact parallel among the Hopi. There, each kiva belongs to a society or fraternity. At Zuñi, the six kiwwitsiwe are the nearest correspondents of the Hopi kivas. It is even not impossible that the words are at bottom the same. The Zuñi kiwwitsiwe however have no connection whatever with fraternities or fraternity rituals. They belong, as the Zuñi say, to the Kokko or gods, that is, the masked impersonators of gods. In other words, their membership is the membership of the tribal organization which performs the rites that the Hopi know as kachina, in distinction from the unmasked festivals of the societies. It must be pointed out again that the difference between these two branches of religion is not only fundamental at Zuñi, in our interpretation, but is quite clear in the native mind. Whether it is an equally basic distinction at Hopi remains to be ascertained. Dr. Fewkes has expressed it, but it does not appear from his presentation that the Hopi are conscious of quite so radical a diversity between their tribal organiza-



tion and the society organization as are the Zuñi. Their association of their kivas with the fraternities, though it may be a survival of an older condition which once obtained at Zuñi, also points in the same direction of a less definite separation of the two currents of cult.

At any rate, the headquarters of the fraternities at Zuñi in recent years, and probably in recent generations, have been the front rooms of ordinary living houses, the room, in each case, in which the permanent inmates of that house eat, sleep, and pass most of their time. It is rather remarkable that esoteric bodies should have selected front rooms for their meetings rather than the really secluded interior ones. The fact appears to evidence that the Zuñi fraternities are not as secret in their essential nature as it is usual for us to assume. Anyone walking by could certainly hear all the songs and, on occasion, see much of what was being done inside. In addition, as Mrs. Stevenson observes, the inmates of the room, far from vacating the same when a ceremony is to be performed, do not even remove their beds from it, although they pretend to sleep.

The fraternity headquarters, then, are all on streets, and mostly on the outer edge of the pueblo. It is rather remarkable that none of them are on courts or plazas, the one exception, that of the Uhuhhukwe, constituting the most recent removal of all. The six kiwwitsiwe, on the other hand, are all on courts, if the blind alley on which Chuppawa and Muhhewa are located be counted, as seems proper, a court. Hekkyapawa, it is true, is on the western edge of the pueblo, but faces the level space known by the same name and reckoned by the Zuñi as a court, as is shown by the fact that this space is one of the four regular stations in which the masked dancers perform. The description of the kiwwitsiwe as being situated in secluded parts of the pueblo, accordingly does not strike me as accurate.

GROWTH OF THE TOWN.

It is of interest that in spite of the strong inclination of the Zuñi of today to leave the old pueblo, they appear to remain attached to it by invisible bonds. It has already been stated that, as expressed in Map 5, when a family makes this move, it appears normally to settle in that part of the suburbs corresponding to the section of the town in which its old home was located. There appears thus to be a marked sense of orientation that survives considerable innovations. Of the same sort is the overwhelming tendency of the people in the outside houses to have their doors face towards the town. Nearly every house north of the pueblo has its door to the south; nearly all on the south side of the river face north, and

the exceptions are almost always to be found in houses that lie some distance to the east or west of the north and south axis of the town and therefore have their doors facing respectively west or east.

Adobe seems to be little used, even for new construction, within the old town limits; but it is rather frequent in the outside houses, though still perhaps employed in only a minority of instances. Not infrequently the first room or two of a house in the suburbs will be built of stone and subsequent additions made of adobe; or vice versa.

It is also obvious that the outside houses on the whole are very much larger than those within the pueblo. As already stated, the Zuñi of today appear to be proud to live in a spacious structure. They receive compliments on this score with gratification. Often the newer houses, and particularly the living rooms, give the impression of being far larger than there is any need for. Of course, this building of great houses in the suburbs is only an intensification of a tendency which is finding expression within the pueblo so far as space and conditions permit. There are almost no small rooms of the old-fashioned type to be found facing any open place. It is necessary to penetrate to the interior of blocks before rooms of this kind are encountered. Even there the tendency appears to be gradually to unite two or three of the small old rooms into a single rebuilt larger one. This tendency toward enlarging is already clearly discernible on Mindeleff's map.

The criterion of age which is thus furnished corroborates the impression which appears to have been gained by everyone familiar with Zuñi, that the three eastern blocks of the town proper are newer than the four western ones. There is not only in general a greater regularity of inner and outer lines, but a much greater average size of rooms. The southern block, and perhaps the eastern half of the northern block, also convey the impression of being not quite so old as the heart of the main or northwestern block. It is in this main block, in the western half of the north block, and possibly in the small southwestern block, that the original lines of the pueblo must be sought. This reconstruction does not imply that the population of Zuñi two centuries ago was necessarily less than at present. With allowance made for the much smaller size of room customary then, as well as for a possible difference in the number of rooms customary in one house, the area indicated, which is less than half of the present pueblo proper, would perhaps have sufficed to hold as many people.

It is also likely that the impulse towards larger houses is a fairly old one and may have begun to be operative soon after the town was founded.

The church and graveyard were clearly not placed in the middle of an established or to be established town, but the town has literally grown



around them. The church, or its possible predecessor, probably stood from the first where it is now. At that time it would have been outside the pueblo and off to the east of it. Gradually the town grew eastward where the ground is nearly level, whereas to the north and west it slopes sharply a short distance from the pueblo wall line. After a time, the church and cemetery were enclosed on three sides. The town, however, continued to grow until the three eastern blocks had been added. It is impossible to say whether this process was continuous, or, whether after the present pueblo limits had been reached, there was a cessation, along the lines indicated in Mindeleff's map, until the recent drift to the suburbs began.

The location of nearly half of the fraternity houses in the three eastern blocks indicates that these blocks possess at least a respectable antiquity. But on the other hand it is no evidence of their great age, even within the two and a quarter centuries that modern Zuñi has stood, on account of the demonstrated readiness of the people to move these headquarters. That the kivas are all in the western half of the town, and, until some years ago, all in the northwestern quarter, that is, in the main and north blocks, is however probably significant, because these structures are avowedly and wholly religious.

THE ORIGINAL TOWN.

Several excavations within the old town lines or close to them were made in 1916 by Mr. Leslie Spier for the American Museum of Natural History. These are shown on Map 6 by the letters K to V, and KK to NN. Mr. Spier states that the pottery found at different levels in these holes grades by a series of continuous transitions from the ware in use today down to a style which is identical with that found in the uppermost deposits of towns like Mattsakya that we know from historical sources to have been abandoned during the Pueblo rebellion of 1680.

The Zuñi, who do not deal in dates, tell that their ancestors did not live in the present town but at Hallonawa directly across the river, where the trading stores now stand. Halonagu is mentioned by Oñate in 1598 as one of the six inhabited Zuñi towns. In the revolt of 1680, the mission of La Purificacion de la Virgen de Alona was destroyed. Hallonawa is therefore well attested as a pre-rebellion town. Moreover, the site of Hallonawa, south of the river, was unquestionably once inhabited. Cushing built the northernmost of the structures now occupied as trading stores, and in digging its foundations uncovered walls, skeletons, and artifacts, on which Fewkes has reported.

These facts have led to the general assumption that the shift from Hallo-

¹ Journ. of Am. Arch. and Ethn., I, 103-105, 1891.

nawa to Zuñi proper occurred in connection with the pacification and concentration of the tribe into a single town at the end of the rebellion in 1693. But this conclusion is certainly erroneous. Mr. Spier's excavations at Hallonawa prove that the pottery of this site is of a type different from the ware that was in use at Mattsakya for some generations before 1680. The Hallonawa pottery is older, and probably older by a considerable interval. The Hallonawa on the south bank of Zuñi River had been long abandoned when the Pueblo rebellion broke. It is likely to have been a ruin when Coronado came.

Since however historical records leave no possible doubt that there was an inhabited pueblo known as Hallonawa not only in 1680 but for a century or more before, it follows that if this was not at what we and the modern Zuñi call Hallonawa, it must have stood either where Zuñi is today or at some spot in the vicinity. The latter possibility must be admitted, but is entirely unsupported by evidence. The probability therefore is that the historical Hallonawa of the sixteenth and seventeenth centuries was Zuñi. The lowest sherds found by Mr. Spier in Zuñi accordingly represent not the period beginning with 1693, but a period antedating 1680 by perhaps two centuries — almost certainly by one.

Cushing evidently had some information of this pre-rebellion Hallonawa-Zuñi — whether from native tradition or historical sources is not clear. Mindeleff, on his authority, makes the pre-1680 Hallonawa extend from the trading stores across the river to what is now the western portion of Zuñi. He even professes to find some vestiges of this older town — or rather half town — in a few discernible wall fragments remaining in modern Zuñi. Nothing of the kind is visible today, in my judgment. In fact, the constant rebuilding which I have cited makes it extremely improbable that even any pieces of walls would survive for two centuries or more between the pre-1680 period and Mindeleff's survey, excepting such as had been buried feet under ground. Mindeleff seems to have been led to his finding through a rather unauthentic idea that the age of walls could be identified by the type of their masonry.

Cushing, then, was probably right in making Zuñis live on the site of modern Zuñi before the rebellion; he was wrong, if Mr. Spier's objective discoveries are worth anything, in considering this residence synchronous with the occupation of the Hallonawa south of the river. This conclusion clears up a difficulty: namely, why a comparatively small town should have been built on both sides of a river that at times cannot be crossed — a condition that would be quite without precedent in the Pueblo region. The conclusion also disposes of another troublesome point in the views heretofore

¹ Bur. Am. Ethn., Ann. Rep. VIII, 88, 1891.



held. Hallonawa is practically a flat site, only slightly elevated above the river. Less than two hundred yards away is the natural knoll which served as a nucleus for Zuñi. The Zuñi towns from the time of Coronado to the rebellion were all on knolls, hills, or rising talus slopes. A Zuñi settlement on the level ground during this part of the Spanish period would be an anomaly. A settlement there centuries earlier, when pottery was perceptibly different, and habits of life perhaps equally so, offers a much slighter obstacle to our understanding.

One question remains: why the Zuñi, living on what from at least 1598 to 1680 seems to have been called Hallonawa, now denominate this site Shiwwanakwe (Zuñi place), or I'tiwawa (middle place), and apply the term Hallonawa (ant place) specifically to the site south of the river. But this problem is largely formal. As a matter of fact the Zuñi still call their town Hallonawa. They use all three names for it. When situation or context forbid confusion, they call Zuñi Hallonawa about as frequently as they call it Shiwwinakwe or I'tiwawa. If on the other hand one Zuñi passes another on the streets of the town, extends the habitual greeting "Where are you going?" and receives the answer "To Hallonawa," it is understood that the responder is on his way to the prehistoric site across the river, and generally assumed that he intends to deal with one of the American traders there. is much as, in Brooklyn, "New York" means Manhattan Island, but in Chicago or a census report, the whole of the city including Brooklyn. Shiwwinakwe and I'tiwawa are in fact descriptive and religious designations, and the proper name of Zuñi as a locality is still Hallonawa.

The depths below the present surface to which potsherds, débris, and accumulations connected with human occupation are found at the several spots excavated in Zuñi, are as follows:—

W	unexcavated
\mathbf{v}	5.5 feet
U	5
${f T}$	a tilled field, natural surface, unexcavated
S	7 '
Q	8.5
Q P	7.5
O	washed sand, no refuse
N	3.5
M	2.5
L	12.5
K	15.5
Room 62a	22 feet below 1915 roof level
KK	4
$\mathbf{L}\mathbf{L}$	11
MM	12
NN	9.5

From these figures it will be seen that while from two to four centuries of occupation have appreciably raised the surface of Zuñi, the opinion that the original site was nearly level, is untenable. Yet the original knoll was small, and the accumulation of wash and refuse has been heavy, averaging perhaps a quarter to half an inch a year, and reaching very likely twice that amount in spots.

Mr. Spier has kindly plotted for me the probable contours of the Zuñi hill as it appeared when first settled. These are indicated in Map 6 by black broken lines.

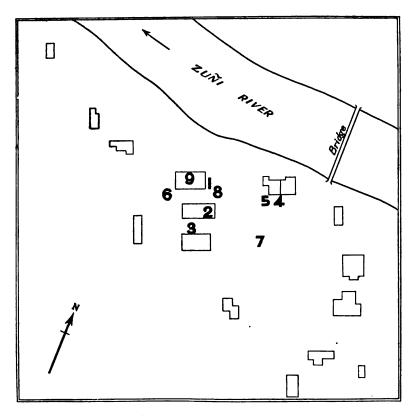
A reliable old Zuñi went about Hallonawa with me and pointed out the sites of the kivas and courts in the ancient village. His information promised to be valuable archaeologically, until I realized that he was placing each structure and plaza in the same relative position as it now occupies in Zuñi. Map 9 reveals the result. The heart of present Zuñi is simply projected on the ground of Hallonawa. Even Ohhewa Kiwwitsinne is correctly given; since in Mindeleff's time, and I do not know for how much earlier, this adjoined Upts'annawa. The native idea clearly is that Hallonawa was old Zuñi and was like it; and that when it was abandoned, the inhabitants packed up and rebuilt their city on the identical plan across the river, the town being moved bodily, as it were.

I have talked casually with many Zuñi about ruins and excavation, and the above seems typical of their point of view. Remains that are post-Spanish and others that are obviously very ancient are thrown together into one blurred past, the innote or "long ago," which seems to begin very nearly where the experience of living individuals ends. I have never heard from a Zuñi the least reference to a historic event. They may possess a stream of semi-historical tradition, distinct from their mythology and schematized conceptualizing of the past; but if so, it drains but a minute fraction of their minds. I have waited two summers for a spontaneous manifestation of something of the kind. Direct inquiry probably would reveal certain traditions; but they would not be the kind that the natives habitually tell each other. The Zuñi are intensely interested in the scheme of structure of their society, and in its divine institution; but their invariable assumption is that since its institution this society has remained a constant unit, unchanged except for little irregularities that come with the wear of time. Such minor variability they seem to regard as obvious, trivial, and not particularly worthy of attention; and such are the conquest of Coronado, the establishment of a mission in the heart of their town, and other actions of the Spaniard with reference to themselves. As a matter of fact, any change imposed on the social scheme is very quickly absorbed into it; a generation or two suffices, the alteration has become fixed, and is reckoned as perpetual as the structure, though perhaps obviously incongruous.



An example. The Zuñi are professedly anti-Catholic and anti-Christian. During the summer of 1916, the proposed establishment of a Catholic mission incurred the displeasure of the whole tribe except a small minority of individuals standing in special relations to Mexicans. In the meeting at which the affair was brought up, the sentiment of the overwhelming majority was so vehement that the negative decision was unanimous; and the result was received not only with general satisfaction but open rejoicings. Yet every Zuñi that has died within the past two centuries lies buried in the unkempt little graveyard that was first consecrated by Catholic fathers, and in the center of which a constantly renewed cross rears its beam. mission church in the heart of the town is to us the ever impressive reminder of the Christian influence imposed on the nation for many long generations; to the Zuñi it is anything but a symbol of the alien religion which they struggle to ward from themselves. They make attempts, mostly ineffectual, it is true, to roof and preserve the crumbling structure of adobe. Some years ago, a wider passage was wanted between its altar end and the nearby houses. The western wall was therefore torn down. But it was re-erected in its entirety, a few feet farther in! The northern face gives evidence of having been similarly shifted. This by a people that resent the coming of the priests, that will not tolerate a Catholic Mexican within view of their religious observances, and from among whom only playing boys, hens, and hogs trouble to enter the edifice which they toil to preserve. We face here a strange conservatism indeed: but it is a conservatism of the present, with no feeling for the past. The church, the graveyard, the cross are not Catholic; they are Zuñi; therefore they are clung to and treated as things integrally and inherently Zuñi.

The habitual attitude of the Zuñi, then, is unhistorical. He derives satisfaction from recognizing his national system, and from thinking of it as fixed since its first establishment. In everything else his interest is but intermittent and perfunctory. That now and then he may preserve fragments of a knowledge of the past that approximate what we consider history, is not to be doubted. But it is equally certain that such recollection is casual and contrary to the usual temper of his mind. From these conditions we must conclude that the shape of these recollections, and even the very selection of their content, is likely to be randomly fortuitous in our sight, whenever it is not wholly determined by the Zuñi's prevailing and sufficient systematization of his narrowly encompassed world.



TRADITIONAL HALLONAWA.

Kivas

- 1 He'iwa
- 2 Muhhewa
- 3 Chuppawa
- 4 Ohhewa
- 5 Upts'annawa

Plazas

- 6 Hekkyapawa
- 7 Tehwitto-tlanna
- 8 Ts'i'a'awa
- 9 K'ochinawa

ANTHROPOLOGICAL PAPERS

OF

THE AMERICAN MUSEUM OF NATURAL HISTORY

VOL. XVIII, PART III

AN OUTLINE FOR A CHRONOLOGY OF ZUÑI RUINS.

BY

LESLIE SPIER.



NEW YORK
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1917

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American Museum of Natural History.

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In 1906 the present series of Anthropological Papers was authorized by the Trustees of the Museum to record the results of research conducted by the Department of Anthropology. The series comprises octavo volumes of about 350 pages each, issued in parts at irregular intervals. Previous to 1906 articles devoted to anthropological subjects appeared as occasional papers in the Bulletin and also in the Memoir series of the Museum. A complete list of these publications with prices will be furnished when requested. All communications should be addressed to the Librarian of the Museum.

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- XIII. Plains Indian Age-Societies: Historical and Comparative Summary. By Robert H. Lowie. Pp. 877-1031. 1916. Price, \$1.00.

AN OUTLINE FOR A CHRONOLOGY OF ZUÑI RUINS.

By Leslie Spier.

PREFACE.

This study is the result of collections made during the summer of 1916. Three weeks were spent in assisting Mr. Nels C. Nelson in a survey of the ruins in the neighborhood of Ramah, New Mexico: during the remainder of the time the survey was continued by the writer alone, principally on the Zuñi Indian Reservation further west. Realizing that the entire region surveyed should be described as a unit, Mr. Nelson has generously placed his notes and collections at the writer's disposal. Our thanks are also due the many willing collaborators, white and native, who expedited the work; in particular to Mrs. E. G. Nelson, William F. Lewis, governor of Zuñi, and Mrs. Lewis. To Professor Alfred L. Kroeber we owe the interest and assistance of the Zuñi themselves, without which little could have been accomplished.

The purpose of the study was to provide a background for ethnological investigations among the Zuñi. In his work of the previous year, Professor Kroeber clearly indicated the possibility of chronologizing the ruins of the Zuñi country. A more extended view of the field showed, however, that for the present the time-relations among the ruins could be given only in general outlines. We found almost invariably that the shallow refuse heaps yielded little or no stratigraphic information and we were therefore thrown back on the hazardous methods of hypothetical seriation. Further, when all the data were assembled it was found that our survey had not covered sufficient territory to complete the chronological outline; that is, it is still necessary to extend the field down the Little Colorado Valley. Nevertheless, we have attempted to give the results a definite form by providing a statistical setting, though it is not claimed that such results are more than indications of what a more extended investigation may discover.

LESLIE SPIER.

July, 1917.

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THE ZUNI REGION.

The area in which the ruins described in the following report lie is situated close to the Arizona line in central western New Mexico. It embraces the territory drained by the Zuñi River and lesser tributaries of the Little Colorado River; a fan-shaped sector extending from the great lava bed on the line of the continental divide to the confluence of the Zuñi with the Little Colorado. The modern political divisions included are the Zuñi Indian Reservation, portions of the Zuñi National Forest, and adjacent settled

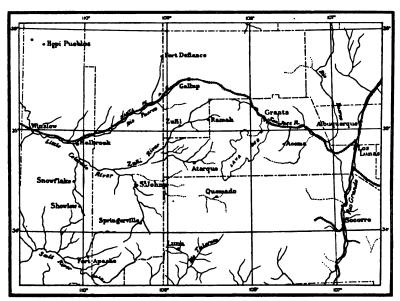


Fig. 1. Map of the Headwaters of the Little Colorado River.

lands, all within McKinley and Valencia counties, New Mexico. This area, which we shall designate as the Zuñi region, measures roughly sixty miles east and west by forty from north to south.

Topographically the area includes the western extension of the plateau which forms the continental divide midway between the Rio Grande and the Arizona line. Erosion by streams tributary to the Little Colorado, viz., the Rio Puerco along the line of the railroad to the north, the Zuñi River traversing the center, and minor nameless streams as far as Atarque on the south, has produced certain marked modifications. The remnants of the plateau

left by the marauding streams stand as the dominant land masses. Across the northeast corner of the area extend the Zuñi Mountains from northwest to southeast. They merge on the northwest into the low, rolling, but broken, country between the Puerco and the Zuñi south of Gallup, rise to nine thousand feet and attain mountainous proportions in their middle section, and merge again in the plateau south of Grants and Acoma. Thence, the plateau sweeps from the great lava bed on the east through the southern half of our area.

Along the southwestern foot of the Zuñi Range extends a broad shallow valley draining westward into the Zuñi River. Emerging from the plateau to the east it descends toward the west until in the vicinity of Ramah (see map, Fig. 2) it reaches an altitude of seven thousand feet. On the north it is hemmed in by the steep declivity of the Zuñi Range, but on the south it lies as an open and barren plain clear to the Datil Range far distant to the south. But a valley-like character is given by a series of mesas extending northwest from Inscription Rock parallel to the Zuñi Range and merging into the Nutria monocline.

At its western end, near Ramah, the drainage from this valley empties into the head of the Zuñi River valley proper, which stretches as a crescentic depression toward the southwest through the center of our area. For the first fifteen miles of its westerly course, the valley descends between canyon walls, one to two miles distant from each other, increasing in height from three hundred feet in the vicinity of the Pescado village to six hundred above the agency, Black Rock. Opening into it from either side are numerous small and narrow canyons cut from the original plateau quite to the present level of the valley floor. Just above Black Rock the main valley is joined by the lesser valley of Nutria Creek leading from a saucer-like depression on the north.

At Black Rock the valley opens out into the Zuñi Basin and here the river drops one hundred feet through a basaltic cliff to the level of the broad plain now exposed. In the center of the plain lies Zuñi Pueblo; low mesas mark its northern margin, and its southern boundary is the sheer, high edge of the plateau. From the northern mesas rise four remnants of the plateau to their original level, the twin Zuñi Buttes and two larger eminences near Zuñi, Kwilliyallanna. Dominating the basin from its

¹ The map does not present topographic features with uniform correctness. It is based on the excellent "Map of Zufii Indian Reservation, New Mexico" (Department of the Interior, Office of Indian Affairs, 1914) and on the topographic map of the U. S. Geological Survey, Wingate Sheet, for the area north of the thirty-fifth parallel. For the area to the south, we have been forced to rely on imperfect sketches and memory. We have, therefore, refrained from showing topography in the southern area, but this does not matter, as the relief there, except in the vicinity of Atarque, is relatively slight.

southern border rises Towwayallanna (the so-called Thunder Mountain) for a thousand feet sheer. Toward the southwest the basin broadens out along the river, now at an altitude of six thousand feet. Its northern margin merges into the low rolling country extending to the Puerco fifty miles distant. From Towwayallanna the edge of the plateau extends due south for ten miles and then swings westward for a somewhat greater distance into Arizona, but the edge is not clearly defined, for badly broken remnants of the plateau fill the region lying between river and plateau edge. Penetrating through these remnants from plateau to river is a minor valley on the edge of which lies the village of Ojo Caliente. A few miles below, the river strikes the impassable plateau, turns abruptly westward into Arizona, and flowing in a general southwesterly direction through the rolling hills joins the Little Colorado River forty miles away.

The remainder of our area lies on the Zuñi plateau. Its northern and western edges are defined by the Zuñi River valley, whence it sweeps south and southeast an indeterminate distance. Nor is it broken by any great valleys, although crossed by two extensive drainage systems. The first of these drains the region southeast of Ojo Caliente, traversing the plateau from east to west to join the Zuñi River not far over the Arizona boundary. The second is much more extensive, embracing all the territory southward of Inscription Rock and Ramah and thence westward south of the first system into Arizona, where the channel is lost in the rolling hills before ever reaching the Zuñi. We have purposely referred to these drainage channels as systems, for as such they exist for the greater part of the year, the typical shallow dry channels of a plateau country. But the plateau is not an unrelieved plain. Along its eastern border extends the great lava bed, a sheet of desolate country separating the Zuñi region from that of Acoma, with outlying tracts of "malpais" within the limits of our area. Westward of this are salt ponds and sinks. The drainage channels themselves form shallow canyons, while at times the plateau rises to an altitude of nine thousand feet, to judge by the flora.

The forestation of the region follows the main topographic features. The Zuñi Mountains and a large part of the Zuñi Plateau are densely pine-clad; lofty pines rising form a variety of scrub growth, including in favorable localities clumps of small oaks. Small springs, little more than seepage places, occur at not infrequent intervals in such forests, and the park-like groves around them make the most delightful camping places imaginable. Such springs occur, of course, at the heads of canyons leading into the drainage channels on the plateau, and by their location was determined that of the habitations in this section. The general level of the plateau, and this includes the majority of the mesa tops, say about seven thousand



to seven thousand five hundred feet altitude, is clothed with low cedar and piñon trees, bayonet cactus (yucca), but not much underbrush. There is but one living stream on this level in the whole area known to us, that at the foot of YallaLanna, northwest of Zuñi. Yet there are many ruins, large and small, at this level, from those perched on Inscription Rock in the east, to the group on Towwayallanna near Zuñi, and the ruin of Kettcippawa, near Ojo Caliente, to the south. In all such places there are depressions, natural or partly artificial, for the collection and storage of surface drainage. It is noteworthy that most ruins atop isolated mesas have springs or ponds accessible to them in the valley below. Near ruins located in canyons and shallow valleys scooped out of the plateau there can still be traced crescentic dams thrown up to catch the run-off. In many instances these have been rebuilt by present-day inhabitants.

The whole floor of the Zuñi River valley, including the broad basin at the foot of the Zuñi Range, is devoid of forest. Its covering is grama grass and sagebrush. This, as the terminous of all the drainage from the surrounding terrain, is naturally the best watered section of the whole region. Yet the chief localities where water may be found in the early summer, before the rains set in, can be briefly enumerated. Beginning at the east, there are springs near Tinaja and a permanent waterhole in the ruin of Cienega (percolating from under the lava sheet). The basin here presents an inhospitable appearance, but water is not far from any of the ruins even at this season. A fair-sized stream has its source in the foot of the Zuñi Range and runs westward past Pueblo de los Muertos to Ramah which is situated at the junction of several drainages capable of cultivation. Further north, Nutria Creek also rises in the mountains as a permanent stream. It is of considerable size and in the neighborhood of Nutria village irrigates an area fully two miles long. At Pescado village six miles west of Ramah are two groups of large copious springs which, gushing from under the lava fault at this point, constitute the perennial source of the Zuñi River. Water is now diverted from the springs into irrigation ditches, as it undoubtedly was in prehistoric times. Many ruins are clustered in the vicinity, duplicating the situation at Ramah. Above the Zuñi Basin the government reservoir at Black Rock now permits the cultivation of an extensive area in the vicinity of Zuñi, but it obscures aboriginal conditions at this point. Irrigation may have been practised here, but of this we are not certain. However, many large tracts in the sandy washes outside of the government project are under cultivation by dry farming and undoubtedly represent the original methods.1 Whipple says of conditions in 1853 that "The soil



¹ Cf. Möllhausen, 98; Sitgreaves, 5, 6, footnote, and 35.

seemed light, but where cultivated, it produces fine crops without the aid of irrigation. Not an acequia was seen; and an Indian, who accompanied us, said they were not resorted to, as sufficient moisture for the fields was derived from rain." The large wash leading towards Zuñi from the north, and others near the foot of Towwayallanna to the south may be pointed out as typical areas cultivated by dry farming. Even sand bars in the bed of the river are utilized. Other washes occurring at intervals further down the basin are now cultivated. The Zuñi River ceases to be a source of water supply in the lower basin; for it sinks into the ground a few miles below Zuñi and only a few pools stand in the lower reaches of its bed. At Ojo Caliente the so-called hot springs 2 burst forth from under the edge of the lava sheet in great quantity and permit the irrigation of a large area. Here, as at other springs, grows the ubiquitous cottonwood. Portions of the washes in the valley above the springs also sustain cultivation.

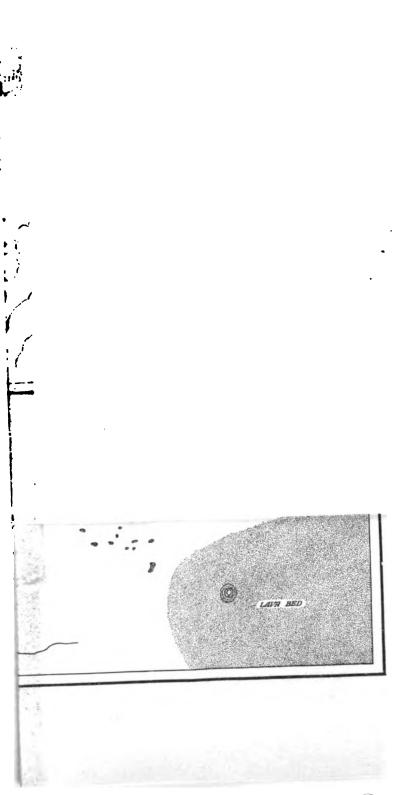
This brief glance at the characteristics of the Zuñi region must have made it clear that this is no desolate waste. In fact, the foregoing description presents the minimum conditions governing the occupation of the region. We have described the country at the driest period in the year, the early summer, after the protracted windstorms have dried up everything and before the rains of that long period from the beginning of July to the middle of September have set in. Nevertheless, a copious water supply is obtainable in only four places, namely Ojo Caliente, Pescado, the Ramah district, and Nutria, and naturally about these, excepting the last, are clustered a great number of ruins. In spite of the fact that the attractions of these localities outweigh all others, all of them have not been continuously inhabited while the region was occupied. There are no certain signs of a general desiccation of this region, the presence of ruins close to the continental divide notwithstanding. For on the one hand, ranches of Zuñi, Navajo, and white settlers are today scattered widely over the same area, and on the other, its potential water resources remain unknown to us.

Climatic conditions are favorable on the whole. In the valley the winters are not regarded as particularly severe, and the summers are pleasantly cool. Most noteworthy are the windstorms of spring and early summer for their obvious influence on the location of habitations. The prevailing winds are from the northwest and west, that is, they sweep through the upper valley. Consequently, the house cluster was often built on the eastern side of a ridge in its lee, or against the western slope of a crosscanyon. This location of the buildings had an additional advantage gained

¹ Whipple, I. 67.

² They were never hot during the time we were excavating in the neighborhood.

from the architectural style — they had their backs (the high side of the building) to the wind. A secondary effect of the strong winds was on the location of the refuse heaps, which are almost invariably to the southeast of the main building, although often to the east and south. Note, for example, the location of the old refuse in Zuñi Pueblo itself. Presumably, the refuse was carried thither so that it might not blow back into the pueblo. The invariable nature of this phenomenon was no mean assistance in archaeological work.



LOCATION OF RUINS.

There are probably more than two hundred ruins in the Zuñi region, fully half of which lie on the present Zuñi Reservation in or close to the main valley. Fifty or more lie east of the Zuñi Reservation, chiefly in the neighborhood of Ramah and in the broad valley at the foot of the Zuñi Range. An indefinite number are situated on the Zuñi Plateau to the southeast, the chief of which were visited; the remainder are, from all accounts, probably only widely scattered small houses. We believe that the following record presents a very fair representation of the ruins in this region; certainly none of the more important sites have been omitted. A few sites of uncertain character and a number of sites where potsherds were plentiful, but not masonry, have been included.

The ruins are numbered in order from the Arizona-New Mexico boundary line northeastward up the Zuñi River valley to its head east of Inscription Rock, thence south and southwestward across the Zuñi Plateau. The location of the ruins is indicated on the accompanying map (Fig. 2).

- Site 1. A single small house, now almost obliterated, stood on the north side of Barth's ranch house near the Zuñi River, which crosses the boundary line into Arizona not over a half mile east of this place. A random collection of sherds was made from the surface of this ruin. There are reported to be similar ruins on the low hills here, but the press of time would not permit a visit to them. Mr. Nelson found a small ruin about three miles west of the Arizona line and north of the river.
- Site 2. Two and one quarter miles from Barth's house on the direct road to Ojo Caliente, i. e., east of the river, is a site strewn with sherds, but no building stone is to be seen. A random surface collection was made.
- A ruin, A'tella Luptsinna, is said to lie somewhere to the east, about four miles or more south of Ojo Caliente.
- Site 3. Half a mile south of Ojo Caliente a low ridge runs eastward across the valley to the Zuñi River. Midway on this ridge, i. e., about two miles west of Ojo Caliente, lies a small ruin, its building stone now much scattered. A random surface collection was made.
- Site 4—Heccotayalla.¹ This is a large ruin situated at the western extremity of the above-mentioned ridge and about one half mile east of the river. This ruin approximates a rectangle 200 by 250 feet (Fig. 3b). The

1 ruin + mountain.

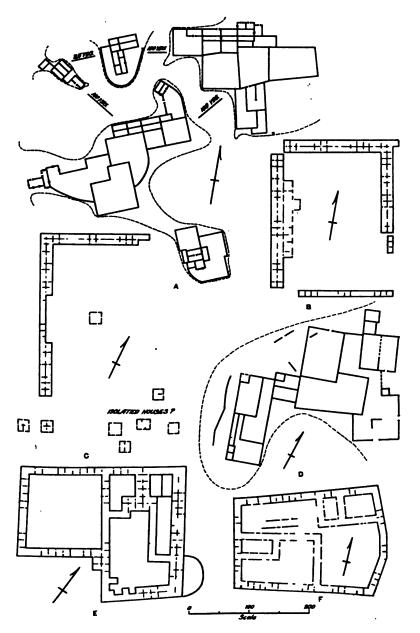


Fig. 3. Plans of Ruins: Ojo Caliente and Zufii Districts. a, Ruin 42; b, Ruin 4; c, Ruin 11; d, Ruin 53; e, Ruin 71; f, Ruin 61.

ruin is in a tumble-down condition so that only a rough approximation could be made of the number of rooms in the width of the pueblo buildings. Strangely enough, trial trenches sunk into the ground where sherds showed thickly on the surface failed to reveal any ash heap, although ashes are widely scattered on the surface. A random surface collection was made.

- Site 5. A small site with little building stone showing lies three quarters of a mile northwest of Site 4 and two hundred feet west of the river. A random surface collection was obtained.
- Site 6. This small site, into which the river has cut, lies half a mile north of Site 5. Shifting sand has covered most of the tumble-down walls. A random collection was made.
- Site 7. From Ojo Caliente a road runs northwest past Hawwikku to the river. Immediately opposite this point the low hills west of the river approach it closely. Here are two sites, at the foot of the slope; the western one small, with scattered small building stones. To judge by the sherds collected from the surface this is a "slab-house" site. There is a similar site one hundred and fifty feet south of this, and others may lie in the vicinity.
- Site 8. Tca' lowa.¹ The other ruin lies a quarter mile northeast close to the river, a mile and a half distant from Hawwikku. The ruin is roughly circular, about 70 yards across with a central depression 40 yards in diameter, tumbled walls showing in all save the southern segment and heaped highest on the northern side. Sherds are abundant on the southwestern and southeastern slopes of the low knoll on which the ruin lies. Trial trenches were dug in both slopes: in the first two thin ash layers were revealed at 1 foot 6 inches and 1 foot 9 inches below the surface, and in the other a thicker layer from 2 feet 4 inches to 4 feet 4 inches below the surface. Random collections of sherds were made from these ash layers as well as from the surface of the ruin. The indications are that the site was not occupied for any great length of time.

A much older small site lies a few steps to the southwest.

- Site 9. About due south of Hawwikku, on the low ridge south of Ojo Caliente there is a small site with the building stone of one or two small houses showing where the sand has blown away. A random surface collection of sherds was made.
- Site 10. On top of a small conical hill one mile southeast is a three-sided structure, perhaps 10 by 15 feet, open to the east. All the sherds in sight a dozen or so were taken, but are evidently a very mixed lot.
- Site 11. The little valley running east from Ojo Caliente is formed on the north by the mesa on which the ruins of Kettcippawa stand and by a



¹ According to informant, Francisco Utima. Cf. Mindeleff, 83.

series of low hills on the south. At the eastern end of these hills is situated the largest of the hot springs, Ky'akwyina.\(^1\) Not over seventy-five yards away and close to the eastern slope of the hill is Site 11, a large L-shaped ruin roughly built of lava blocks from the hillside above. It is now much destroyed but its general proportions can be made out (Fig. 3c). A number of confused heaps of lava lie on its southern side; some may be isolated houses. A random surface collection of sherds was made.

Site 12—Ky'atcekwa.² This is a small establishment of the Kolliwa type, but lacking corrals, and the sherds found there are of the same sort. It lies about half a mile east of Ojo Caliente on the mesa where Kettcippawa stands: from one wall of the buildings the mesa drops precipitously, from the other the slope is steep. The ruin consists of a series of scattered small buildings, each comprising a few rooms in a line along the mesa edge. Room sizes vary — 7 by 15 or 18 feet. A random surface sherd collection was obtained.

One similar structure (10 by 12 feet?) is located on a small knoll alongside of the wash just at the foot of the cliff here. Its sherds are identical with those of Ky'atcekwa.

Site 13—Kettcippawa. Mindeleff's survey ³ seems an adequate description of the superficial characteristics of this ruin dating from the Spanish occupation. Ashes and sherds are strewn over a considerable area around the ruin. It would seem that the ruined Spanish church here was built outside of the original pueblo and that it was subsequently enclosed by the expanding house clusters, so that the oldest part of the pueblo is probably that along the slight ridge northeast of the church. A trial trench, dug as close to these house walls as possible, revealed ash to a depth of 4 feet 6 inches at which point the original mesa surface was reached. No evidence of a change in pottery types was encountered, so that it was not considered expedient to make stratigraphic observations. A comparison of a small sample of sherds from the lowest part of this ash heap (3 feet 6 inches to 4 feet 6 inches) with those from the surface shows no material differences. Our conclusion is that the pueblo was not occupied for any considerable period.

Site 14. East of Kettcippawa is a series of interesting sites which appear to have escaped the notice of earlier investigators. Beginning about



water + out?

² water + sweet? Hodge, (a), 148, evidently refers to this cluster of ruins in speaking of "T'kanawe (a triple pueblo of which Kechipauan formed a part), on the mesa to the southeastward [of Hawwikku]." The sherds of this cluster, however, evidently post-date those of Kettcippawa.

³ Mindeleff, 81-83 and Plate LXIX. The church appears to be built, at least in part, on top of an ash heap.

a quarter mile from Kettcippawa and extending along the ridge to its eastern brow half a mile away are six or more little sites. All show similar characteristics; a scattering of small stones and ashes on digging. Sherds are plentiful on the surface and all of one type, "slab-house." Random collections of sherds were made at three of these sites, the easternmost (14-a), westernmost (14-c), and one between (14-b).

Excavations were made in the largest site, the most eastern. Here, as in the other sites, small building stones were found; small in amount in proportion to the size of the site. This seems unusual since larger stones abound on the mesa and were used at Kettcippawa. In addition, several large slabs, a foot or two across, were found at one point in an ash layer. Nearby several manos and an open fireplace were uncovered: a circular depression, eighteen inches across and a foot deep, half lined with stones. Its position on the hillside would indicate that it lay outside of any house structure. It seems safe to say that the characteristics of this site, small stones and large slabs, and pottery, are identical with those of Site 40, Shoptluwwayala (see below, p. 227). In all probability this is a village of "slab-houses."

- Site 15. A single small site similar to those of Site 14 lies opposite Kettcippawa at the foot of the mesa alongside of the Ojo Caliente wash. Here too only small building stones are found. A random surface collection was made.
- Site 16. Ascending the valley in which this wash flows the first site seen lies close to the foot of Kettcippawa mesa at its eastern extremity. A few sherds among the rocks of the talus indicate some sort of settlement.
- Site 17. Continuing directly east from this place a ruin is found on the point of the ridge extending westward on the north side of the valley. The site is three and a half miles from Ojo Caliente. The ruin is fairly well defined: a double row of rooms 65 feet long and then a single row for 20 feet extending along the ridge. A random collection of sherds was made from the surface here.

Several vague groups of building stone — probably single-roomed houses — with similar sherds lie west of this ruin.

Site 18. A larger site lies a quarter mile east of Site 17 on the backbone of the same low ridge. This ruin measuring 70 by 20 feet extends along the crest of the ridge. Extending from it down the slope to the south is a shallow reservior, 50 by 100 feet. The retaining wall of this structure is of masonry, partly a laid-up wall and partly of slabs set on edge. A random surface collection was made.

One hundred feet west of this is another group of rooms.

Site 19. A small ruin is situated half a mile east of the last site at the inner end of the same ridge. A random surface collection of sherds was made.

Site 20. Continuing up the side valley due east for about five miles from Ojo Caliente a group of ruins was found in the widened section of the valley. The westernmost is a small ruin on the edge of a little hill north of the arroyo. The pottery on this site is similar to that of Site 24 (q. v.).

Site 21. This ruin lies on the brow barely half a mile east of south of Site 20. It is the largest single house of this group of ruins: building stone is scattered over an area 30 by 50 feet. A random surface collection was made.

Site 22. Directly east of the last ruin and half a mile distant is another, similar but smaller. Black-on-red pottery occurs in a small percentage at this site, but by some accident was not included in the random surface collection made here.

Site 23. To the northeast of Site 22 and but a short distance from it, that is, in the middle of the valley, is a small ruin on a knoll. A random surface collection was made.

Site 24. The most easterly of this group of ruins lies close to the foot of the mesa at the northeasterly edge of the little basin. Here several small houses are perched on a series of little knolls between the talus slope and the arroyo. Each cluster is small—a few rooms only—and now much tumbled down. Random collection of sherds were made at the clusters at the extreme west (24-a) and east (24-b).

The location of the fields cultivated by the inhabitants of this basin is not clear. The valley here is badly eroded and the main arroyo is now very narrow and deep. The drainage down the sides of the basin may, however, have been caught in storage reservoirs. But this section may never have been cultivated; fields in more favorable localities, as near Ojo Caliente, being used.

Site 25—Hawwikku. This ruin lies on the point of a spur projecting southward from a low, rounded hill into the center of the broad plain west of Ojo Caliente. More exactly it lies one and a half miles northwest of that village. The remains of this pueblo, occupied at the time of the conquest, have already been described by Mindeleff. Inasmuch as this ruin was not available for the purposes of the present inquiry only a random collection of potsherds could be taken from the surface of the site.

Site 26. There are three groups of ruins on the western slope of this low hill. The first, half a mile north of Hawwikku, is comprised of several small houses. A random collection of sherds was made at the southernmost, Site 26.

Site 27. A single house lies three hundred feet west of Site 26. A random surface collection was made.

Site 28. The second group of ruins is not quite a quarter mile north on

¹ Mindeleff, 80 and Plate XLVI. Also Hodge, (a), 146 et seq.

the same slope. These are the remains of two or three small buildings. A random surface collection was obtained.

Site 29. The third group of ruins is a mile north of Hawwikku and consists of a cluster of single-roomed houses. A random surface collection was made.

Site 30—Acenntelowa.¹ Nearly two miles north of Hawwikku the Zuñi River swings eastward until it meets a spur from the ridge on which Hawwikku stands. At this point are the ruins of two buildings, the first of four rooms end to end, the other an isolated single room. An arroyo enters the river just south of the ruin; its broad delta now under cultivation. A random collection of sherds was made.

A small older site is on the extreme end of the spur near the river.

Site 31 — Mumpalowa. From Ojo Caliente the road to Zuñi runs due north for a little more than four miles. At this point the road divides, the left branch running west to the river which it follows to Zuñi, the other taking a northeasterly direction directly toward the town. Just south of the fork and east of the road lies a single-roomed structure, 8 by 10 feet, called Mumpalowa. It seems probable from the character of the masonry and the mixed lot of sherds present, that the house was occupied at an early period and again quite recently. The large wash just south of the ruin is now under cultivation.

Site 32—Hampassawa.² The wide, open valley between Ojo Caliente and Zuñi contains no ruins known to us except Mumpalowa and Hampassawa. The latter occupies a little knoll on the south bank of the river four and a half miles below Zuñi. It consists of a few rooms, some of which may have been reconstructed more than once. A random collection of sherds from the surface of the knoll shows this.

Kwakina was said to lie northwest of Hampassawa, but we did not visit the ruin.

Site 33 — Pinnawa. A mile and a half west of Zuñi, a spur of hills projecting into the valley from its southern border terminates at the south bank of the river in a low knoll. On this lies the ruin of Pinnawa, now almost entirely destroyed. The walls shown on Mindeleff's map ³ are still faintly traceable, otherwise only a confused scattering of small building stones marks the site. Some of these walls are evidently those of recent corrals, etc., although some may follow old lines.

A trench at the brow of the southwestern slope of the knoll - where

³ Mindeleff, 86. This volume, p. 22.



¹ rocks + crooked?: so named by Francisco Utima, Tca'lowa according to Gov. Lewis. The confusion in naming Sites 8 and 30 is reflected by Mindeleff, 83, who was informed that there was a "series of ruins called Chalowe." The group he refers to probably included Sites 8 and 26–30 and perhaps others. A reference to the sherd analyses shows that these were not all occupied at the same time.

² Mindeleff, 83.

Mindeleff indicates a curved wall — showed only scattered débris. Excavation in the center of the northeastern corral — not ten yards from the peak of the knoll — uncovered a refuse heap 6 feet 6 inches in depth. Similar trial trenches here and there over the site indicate quite clearly that the original pueblo was a small cluster of houses perched on a little knoll, its present apparent size being due to the scattering of masonry débris in the building and rebuilding of corrals subsequent to its abandonment.

A section of the deep ash heap one yard square in area was removed six inches at a time. This ash heap, like all others found, was strongly marked by horizontal bedding. From the surface downward there was successively a mixture of dirt and ash for 18 inches, clear ash to 5 feet, and the mixture again to the original surface at 6 feet 6 inches below the present surface, broken also by a thin layer of clear ash at 5 feet 6 inches. The section contained a very large quantity of potsherds, over six hundred of them being taken from the ash between 4 feet and 4 feet 6 inches below the surface.

Site 34— Tetlnatluwwayala: Site 35— Te'allatashshhanna. A short distance south of Pinnawa on the same sloping ridge lie half a dozen scattered houses, the southernmost, half a mile from the river,— single rooms probably, now uncovered and soon to be reburied in shifting sand. Two of these are now marked by shrines.¹ Manos are scattered about and broken pottery of similar type in all of the sites. Here, as was uniformly our experience in the small ruins, the sherds were thinly scattered, and no ash layer deep enough for stratigraphic observation could be found, so that we had to be content with a random sherd collection from the surface.

Site 36. Following a little arroyo down the slope towards Zuni for two hundred and fifty feet, we came on a still buried ruin through which rain wash had cut for fifty or sixty feet. Sherds showed plentifully along the arroyo and a random collection of these was made.

Site 37 — Hattsinawa. On the opposite bank of the Zuñi River from Pinnawa, but several hundred yards nearer town, is a knoll bearing the débris of Hattsinawa. No building stone is in sight on the surface, and the excavations over the entire top of the knoll failed to bring any structure to light but did turn up some building stone.² Ashes appeared in quantity

 $^{^{1}}$ Page 10. This and all succeeding references of this character are to Parts 1 and 2 of this volume.

¹ Page 7. The presence of pebbles strewn on the surface of this site and Shoptluwwayala and the absence of masonry thereon seems in no way significant, for the pebbles appear to be the remains of a layer of conglomerate which capped these and other knolls and prevented erosion of the spot. The conglomerate is to be seen on the hills to the north and to the south. In addition to this fact, some masonry was found at both sites on excavating. It must be remembered that Zufii and other pueblos, now abandoned, lie in the middle of a broad valley several miles from the source of building material, the talus slopes of the bordering mesas. In consequence ruins in the vicinity of the town have been stripped bare of stones, except for a few unusable pieces.

only in one spot, on the southern or river side, where a layer of ash much mixed with dirt but only eight inches deep appeared. Sectioning was, therefore, out of the question, but a random surface collection was made.

It seems probable that only a single house of a few rooms stood slightly riverward of the center of the knoll.

Site 38. Half a mile below Zuñi the river makes a slight bend toward the southwest. At this point, but two hundred fifty feet from its north bank, potsherds and a few stones are scattered over the area fifty feet square. The remains of a little ruin, probably of not more than a room or two, are evidently buried there. A random collection of sherds was made.

Site 39 — Hallonawa. Immediately opposite Zuñi, on the south bank of the river, is the flat knoll where the ruins of Hallonawa once stood. Superficially, nothing remains of them now, save an occasional potsherd; this seems to have been the case in 1885 as well. The site is now largely covered by occupied houses and traders' stores, so that operations today are well-nigh impossible.

It would seem from the published accounts of earlier investigators ¹ that the pueblo was relatively small, and lay principally east of the house of the Hemenway Expedition (still standing) on the highest part of the knoll, with refuse heaps on the south slope.

Test holes sunk into the southern slope of the knoll brought some refuse to light; in one case a layer of mixed ash and dirt 18 inches deep and in another 3 feet 6 inches deep. The sherds recovered in these excavations were of identical type.

• Site 40 — Shoptluwwayala. In front of the government day school northwest of the village is a low elliptical mound, 230 feet long, rising but slightly above the surrounding plain. The place is marked by a shrine and an abundance of small fragments of pottery. No building stone lies on the surface, but some was found in excavating the site. The absence of masonry is undoubtedly due to the proximity of Zuñi and Hallonawa, both pueblos far from natural sources of building material.

A trench carried across the short diameter of the mound brought to light evidences of a superposition of structures here. A layer of mixed ash and dirt was found over the mound to a uniform depth of about two feet. On the surface and in the upper part of this layer were sherds of certain types of pottery, including redware, found together elsewhere in similar associa-

¹ Mindeleff, 88 and Plate LVII; Fewkes, (a), 103. Pottery from this ruin is also described by Matthews, 151 and 153, Fewkes, (c), and Cushing, (a), Plate II. We cannot agree that Hallonawa occupied both sides of the river, for the pottery from this ruin differs essentially from that of Zufii. Further, the existence of "old" walls in Zufi in 1885 cannot be adduced as evidence favoring this point, for those walls must stand (or stood) far above the original knoll on which Zufii is built. We will return to this point later.



tion. Deeper in the mound were other types, whiteware, such as were found at Sites 3, 7, 14, 15, and 50, and associated with these an unusual type of structure.

This structure is of the type known as "slab-house." Elliptical in shape, 11 by 8 feet inside diameters, it lay with its floor excavated 16 inches below the original surface of the mound, and now covered to a depth of over 4 feet.

The wall, still standing in the original excavation and in some places for a few inches above, was 4 to 6 inches thick. It was made of adobe plaster over small stone slabs set on edge in a row near its outer face. Above the slabs the adobe alone formed a wall of the same thickness. There was no evidence that the adobe had been formed into rectangular bricks, but rather that it had been built up in rough masses. The slabs were all small, about 8 by 10 inches across, thin, irregular, and not dressed. While they were set end to end and the intervening spaces filled in with smaller stones similarly placed on edge, the resulting structure was in no sense a masonry wall. No entrance gap in the structure could be found, but it must be remembered that practically nothing remained except the portion below the original surface of the mound. The floor of the house was covered by a layer of chunks of charcoal, 2 inches deep over all and in some places mixed with earth to a depth of 6 or 8 inches. This looked very much like the remains of a wooden superstructure, burnt and fallen in.

Alongside of this slab-house a hole 3 feet in diameter had been sunk below the original mound surface for a depth of 5 feet and had been subsequently refilled with mixed dirt and ash. Near the mouth of this hole were piled several stones which may represent the remains of a coping. Its purpose remains a mystery: it seems too large for a post hole and too free from débris for a well or a cooking pit.

In another part of the knoll a fireplace similar to that found at Site 14 was found. This was evidently outside of any house structure.

Zuñi. The growth of modern Zuñi has been treated in an earlier section of this volume. Dr. Kroeber has also given there the pertinent results of our excavations within the town, the location of excavations, extent of the original knoll, etc. The pottery data are given below (Table II) and historical notes in a later section. One or two other points may be brought together here.

Excavations showed only modern refuse at the points N, F, U, and V (see p. 202) as well as other points. Similarly for the excertion KK, which proves conclusively that the southeastern house blog varion KK, which On the other hand, the southern block is relatively good is of recent date. On the other hand, the southern block is relatively good is foundations (at Q) rest on sixteenth century refuse was uncient, since its foundations (at Q) rest on sixteenth century refuse was uncient, since its foundations. Unfortunately, no ruined section a state of the southwestern opens in the southwestern

block. Working nearer the main house block, ancient refuse was found at the foot of the original knoll at Muhhewa and east of Room 105 (K and L) and in addition buried walls at the latter place. Working in between the main and northern blocks, similar results were obtained in the Rat Plaza and its entrance (LL and MM). Thus, working in toward the heart of the town from all sides, we found the oldest sherds in immediate contact with the original knoll just as might be expected. These results are as definite as can be hoped for so long as the town remains occupied. They indicate that the oldest section of Zuñi was the main block and the western end of the north block perched on the original knoll; then the town expanded along the base of the slopes, forming the southwestern and southern blocks and the eastern end of the main block; finally, the three eastern blocks were built on level ground.

An interesting confirmation appears in the reports relating to the early American occupation. Simpson (1849) publishes a sketch of Zuñi,¹ evidently drawn from the vantage point offered by the roofs in the vicinity of what are now Rooms 50 and 60, showing two or three houses in the eastern block and one or two in the southern, but the northeastern does not appear at all. The expansion had presumably not proceeded far east of the church at that time. Indeed, Simpson, Whipple, and Möllhausen refer to the compactness of the pueblo, houses extending over most of the streets.

The drift away from the pueblo must have begun fairly recently. There were evidently no permanent structures outside of the pueblo in Whipple's day (1853) except for a small group at Hallonawa shown in Möllhausen's two drawings.² Neither Simpson, Sitgreaves, Whipple, nor Möllhausen refer to villages at Ojo Caliente or Nutria. To be sure, not one of them passed near these places. The lower Pescado village had been established however, but when seen by Simpson it was in ruinous condition and only visited by planting parties in the summer and by occasional herders. Even today the farming villages are occupied throughout the year by only one or two families: the fact that they are occupied at all bearing an obvious relation to present safety from hostile raids.

Site 41 — Amossa.³ The northern wall of the valley opposite Zuñi is a long low mesa ending abruptly four miles west of the town and from this the big mesas, Kwilliyallanna (two + mountain) and the Zuñi Buttes rise, towering a thousand feet above the valley. At the southwest corner of this mesa is Arch Spring with the ruin of Amossa above it on the mesa.



¹ Simpson, Plate 59.

² Whipple, opp. p. 67; Möllhausen, opp. p. 98.

rock + head or boss?

Judging by a casual inspection this is of the Kolliwa type: its sherds are also similar.¹

A mile or so northwest of Amossa is A'tella Cillowa, a ruin said to lie close under the Zuñi Buttes. Nearby is another ruin.

Site 42 — Heccotalalla. On the same mesa with Amossa and two miles northeast from it is Heccotalalla 2 close under the foot of Yallalanna (mountain + big), the easternmost of the two big mesas seen from Zufii. At the foot of the mesa is a shelf several hundred yards broad into which head several small canyon about 100 feet deep. The ledge is sand-covered, now supporting a peach orchard and large cottonwoods: corn might once have been grown there. Water from permanent springs just under the cliff flows in a little stream across the ledge into the head of one of the canyons. Sandy patches in these canyons and broader areas less than half a mile distant may have been cultivated. On four of the knoll-like promontories between the canyon heads stand clusters of ruins conforming closely to the contour (Fig. 3a). The situation could hardly be bettered from the standpoint of defense and with its adequate water supply and fields near by might have sheltered a large population.

The ruins are evidently those of a refuge village identical in character with Kolliwa and Wimmayawa.³ House remains are quite extensive, but the corrals are few in proportion to the other refuge villages. Sheep might have been herded against the cliffs here, however. There is great uniformity in size of rooms and corrals in all the refuge villages — 7 to 9 feet by 20, 25 and 30 feet. The ash heaps here are but a few inches deep. A random collection of sherds from the surface indicates that the ruin dates to post-Conquest times.

Site 43—"W." 4 Only a few sherds show at this site in the fields half a mile north of the village.

Site 44 — Shunntekkya. East of Zuñi, the ruin on the extreme south is Shunntekkya. South of Towwayallanna a deep and narrow canyon runs for miles into the Zuñi plateau. The ruin was pointed out on a ledge to the east of the mouth of this canyon, about six miles southeast of Zuñi. From a reliable description it appears to resemble Kolliwa in character, and in fact, the sherds from the site collected by Dr. Kroeber ⁵ indicate that this too is refuge village of post-Conquest times.

Site 45 — Kyakkima. Two miles northwest of Shunntekkya is Kyak-

Whipple, I, 71.

² Fewkes, (a), 111, as Hesh-o-ta-thlu-al-la.

³ Cf. pages 24 and 30.

⁴ Page 28.

Page 34.

kima, perched on a talus slope close under towering Towwayallanna. The ruin is sufficiently characterized by Mindeleff's description and Kroeber's amending statements.¹ The pueblo covers a fairly large area, larger in fact than shown on Mindeleff's plan, for there was evidently a row of rooms along the southern brow of the knoll, another on a ledge midway down the southern slope, and isolated rooms between at the southern end. We would venture that none of the houses in the ruin was over one story in height.

The chief refuse dumps are on the eastern and southern slopes. Ash appears in the first place to a depth of only three feet and but two feet in the latter. This disappointing shallowness and the slight range in pottery types in the heaps precluded stratigraphic work. Collections of sherds were made from the surface and trenches, however. More obsidian chips were seen on the surface here than at any other site in this region.

Site 46 — Kyakkima West.² Kyakkima stands on one side of a gulch running into Towwayallanna: on a talus slope on the opposite side are many scattered sherds. In fact, the sherds are plentiful all over this knoll, up to its very top a hundred feet above the valley floor. But, although the search was carefully made, no signs of a structure referable to these sherds could be found. A random collection of the sherds was made from the surface here.

Site 47 — Towwayallanna. Three miles southeast of Zuñi the mile-long mesa, Towwayallana, rises for a thousand feet above the valley. Scattered over its southern end and directly above Kyakkima and Kyakkima West are the ruins of thirty-eight separate buildings. All of these, with the exception of two, are small. We must agree with Mindeleff and Fewkes that the statements of Cushing and Bandeher that these buildings fall into seven groups "corresponding it would seem, to the original Seven Cities of Cibola" is absurd. So far as we can judge from Mindeleff's admirable plan, with which Bigelow's agrees fairly well, no grouping whatever of the buildings is discernible. Dr. Kroeber has collected sherds at random at this site.

Site 48 — Mattsakya. A ridge of foothills extends northwest from Tow-wayallanna touching the river nearly two miles east of Zuñi. The remains of Mattsakya lie scattered over the knoll that terminates this ridge at the river end. The ruin presents a confused mass of débris and only the general position of its rooms can be traced. Building stone is scattered more



¹ Mindeleff, 85 and Plate LII; this volume, 22; Fewkes, (a), 109. Mindeleff's plan is oriented with north to the left.

¹ Page 10.

² Cushing, (a), 156 and Plate IV; Whipple, I, 69; Mindeleff, 89 and Plate LX; Fewkes, (a), 110; this volume, 28. Bandelier, (b), 334 has six groups instead of Cushing's seven.

thickly along the eastern ridge than Mindeleff's plan 1 shows, so that it would appear that the principal house group was here. There are no evidences of any structure in the flat area on the western slope of this ridge, however.

The most favorable, and therefore presumably the oldest, building location is along the ridge forming the eastern backbone of the village. Sherds are scattered thickest over the eastern slope of this ridge and here was found an ash heap about 4 feet thick.

Into this two sections were cut, each a yard square, and the sherds were removed in six inch intervals. In the first section, near the southern end of the ridge, two skeletons were found in the original earth below the ash layer. One of these lay entirely outside of the section area; the skull of the other extended under the section. But inasmuch as the layers of charcoal in the ash heap continued unbroken horizontally over this skeleton, it is clear that the burial was made before the ash heap accumulated. In the second section, near the northern end of the same slope, an old wall was encountered below the ash heap; about this soil had drifted or been filled before the ash heap was formed. The base of the wall stood on the original hillside over six feet below the present surface; its upper part lay within the ash heap for about six inches. While burials and a wall older than this immense ash heap were found, it did not seem feasible to search for a still older ash heap. We believe, however, that the sherds from it represent the range of occupation of Mattsakya fairly closely.

Judging by the level on which the old wall stood and by the extent and thickness of the ash heap, it would appear that the walls of the structure along the ridge must still stand four or six feet high though buried. In that case the structure was presumably only one story, or in part only two stories high. We agree with Fewkes that the ruin was not large.²

Site 49. This is a small site in the sand dunes, one-eighth mile north of the Zuñi irrigation canal and one quarter mile west of the Gallup road. Building stone has been much scattered by washing so that a structure cannot be defined. A random collection of sherds was made here.

Site 50 — He'i'tli'annanna. Two miles due north of Zuñi, close to the long mesa on the northern edge of the valley, is a little knoll on which stands an abandoned shrine. In the vicinity of this are scattered sherds of the "slab-house" type. Kroeber has tentatively put forward the suggestion that the presence of pebbles on the knoll was of cultural significance, but excavation shows that these are merely the remains of a disintegrated con-



¹ Mindeleff, 86 and Plate LV; Bandelier, (b), 336; this volume, 22.

^{*} Fewkes, (a), 110.

¹ Page 32.

glomerate (cf. Site 37, p. 226). Just north of the knoll is an area not over fifteen yards square where ash and sherds are mixed with the soil to a slight depth, but excavation revealed no trace of a structure.

Site 51—"Y." This site lies a quarter mile northeast of He'i'tli'annanna on a low ridge which parallels the higher mesa to the northwest. It is located on the outer end of a small spur. A small but deep canyon cuts through the ridge fifty yards east. Water for the occupants of this site might have been obtained from the "tanks" in the rocky bottom of this canyon, or by digging for seepage in the wash above.

Vestigial remains of a single-roomed (?) structure, of indefinite shape, probably with masonry walls was found. The building stone has presumably been carted off with stone quarried in this ridge to go into the building of modern Zuñi.

Kroeber's "Site X" probably lies a mile due east of this site.

Site 52 — Kolliwa. Half a mile northeast of Site 51 — that is, nearly three miles northeast of Zuñi — are the two house clusters of Kolliwa.² They lie on two promontories on either side of the head of a small and deep canyon which cuts into a bench half way up the mesa. While separate structures, the two clusters are identical in construction and pottery, and were, therefore, coeval refuge villages. The structures consist of a cluster of dwellings with large corrals attached; each conforming closely to the configuration of the knoll on which it stands.

Kolliwa appears to have been a stronghold into which sheep were driven during raids by Navajo (?) in post-Conquest times. It was occupied only for a short time, or for several such periods, for the ash heaps are but a few inches thick and the scattered sherds show no great range of type.

Site 53 — Wimmayawa.³ Three quarters of a mile northeast of Kolliwa is Wimmayawa capping a small hill at the eastern edge of the same mesa. The ruin is close to the Gallup road, quite three and a half miles from Zuñi. Like Kolliwa, it consists of a small cluster of inhabited rooms, none over one story high, with sheep corrals attached. The area of habitations is somewhat more extensive than at Kolliwa, but was inhabited by not more than a few families. There are indications that the original corrals were smaller than those now standing, but the removal of intermediate walls has given the corrals their present large size (Fig. 3d).

The pottery, like that of Kolliwa, is evidently post-Conquest. The ash

¹ Page 33.

² Page 24. Kroeber's plans are essentially correct. We might add, however, that both corrals in West Kolliwa are entirely closed by walls and there is another small room in the cluster there.

^{*} Page 30.

heaps are too shallow for stratigraphic work and the pottery types present no great range. This was obviously a refuge village occupied like Kolliwa for a short period only.

- Site 54. A small reconstructed house, about ten feet square, lies just west of the Gallup road where it enters the low hills two miles from Zuñi. A random surface collection of sherds was made.
- Site 55. Nearer the Gallup road scattered potsherds were seen but no building stone. Some of these were collected at random.
- Site 56. Skirting these low hills which border the Zuñi Basin in this, its northeastern corner, we find the following sites. Two miles due northeast of Zuñi and an eighth of a mile from the irrigation canal is a small house ruin on a knoll. The house measures 20 feet by 10: its walls are fairly distinct. A small collection of sherds was made here.
- Site 57. Half a mile east is another small ruin on the slope of a low hill. Now nearly obliterated, a low mound of scattered stones, about twenty feet square marks the former position of the house. Sherds are scattered down the slope to the west.
- Site 58 Katika. Further east the low hills swing northeast and are approached quite closely by the river. Less than half a mile from Black Rock the hills turning again directly east form a little cove in which lies Katika. Masonry débris is heaped over an area 60 feet by 25. Two rooms about 8 feet square, can be distinguished at the eastern end. This small house is about twenty-five yards north of the irrigating canal, and Mr. R. J. Bauman says that potsherds, whole vessels, and turquoise were found when the latter was constructed. A random collection of the sherds here was made.
- Site 59. The Zuñi Basin heads at its eastern end in a long semicircular cliff of black lava on which the agency now stands. This is known locally to the whites as "Black Rock." The Zuñi River poured through a gap in this rock now filled by a dam dropping one hundred feet in its passage. We have examined the fields below and above the cliff for ruins, but while recent structures are numerous we could locate only two ancient ruins. Half a mile west of the agency is a little ruin perched on a knoll close under the cliff. The main Zuñi-Black Rock road cuts through the ruin and during its construction sherds and skeletons (?) were found. The house is built of lava blocks and has been reconstructed since its first abandonment. The sherds here are of several distinct periods mixed.
- Site 60. Directly above on the cliff is a small ruin. It lies close to the road which traverses the cliff. The house is L-shaped, the sides respectively 40 and 20 feet long and 10 feet wide. Potsherds are plentiful on the surface here.

Site 61. Interrupting the west-to-east sequence in the description of these sites, there are a number of ruins north of the Zuñi Basin to be noted. Following the Gallup road for about seven miles from Zuñi a road is found branching off to the left to Manuelito on the railroad. Continuing west on this road for two miles the ruin of a large pueblo is found close under the eastern foot of a low mesa. The ruin is roughly rectangular, seemingly with only a single row of rooms around a central court in which lie some other poorly defined structures. (Fig. 3f.) One hundred feet west of the main building is a small F-shaped structure 90 feet long with one wing 50 feet long. We suspect that our random collection of sherds from the surface here, the governor of Zuñi assisting, contains a lower proportion of redware than is actually present. On reference to Table XI it will be noted that this type of pueblo is usually associated with a higher percentage of redware.

There is said to be a three or four-roomed ruin on the mesa above this pueblo, and another a mile southwest on the mesa — but the latter could not be found. Another small ruin, perhaps recent, can be seen on a ledge of the mesa opposite.

- Site 62. More than a mile northeast across the valley from the large pueblo is a ruined settlement of nineteen small houses strung along the foot of the mesa. The houses have for the most part three to six rooms: one has a dozen. Three of the ruins lie on small hillocks and a fourth on a ledge of the mesa: the remainder lie on the valley floor close to the mesa. So far as inspection on the spot can show, the sherds at all of these ruins are identical in type and proportions.
- Site 63. A small site in the main valley, located by Mr. Nelson, lies half a mile east of the reservoir at Black Rock and south of the Ramah road.
- Site 64. Four miles east of Black Rock the valley is narrowed to a half mile in width by two high mesas. Several small ruins lie in the valley here. Site 64 is nothing more than a patch of sherds scattered in the sand to the north of the Pescado road four and a half miles from the agency.
 - Site 65 Heppokoa. This site is said to lie on a ledge pointed out half a mile east of Site 64. The ledge is located at the eastern corner of the mesa on the northern side of the valley.
- Sites 66-68. Three small ruins were located by Mr. Nelson along the road which skirts this mesa and leads to Nutria. All three lie within a mile or so of the main valley.
- Site 69. Returning to the Pescado road a small ruin is found north of the road a short distance east of the junction of Nutria and Pescado creeks. Only a little masonry shows. A random collection of sherds was made.
- Site 70. At the eastern foot of the southern mesa is a small house ruin between the road and Pescado Creek. It is half a mile east of Site 69. A random surface collection of sherds was made.



Site 71—Heccotaluptsinna.¹ Opening into the main valley from the south is Horsehead Canyon, a long valley penetrating for miles into the Zuñi plateau quite to the headwaters of the Little Colorado proper. A deep arroyo winds down this valley, joining Pescado Creek five and a half miles east of Black Rock agency. Situated on a low knoll at the junction of the streams is a large pueblo of the rectangular type.² The walls, while almost entirely tumbled down, can at least be traced (Fig. 3e). The principal refuse heap lies southeast of the ruin, but is only 2 feet deep. A section (4 square feet in area) was made in this heap and the sherds removed as usual from successive layers 6 inches deep. The quantity of plaster in the first foot and a half of this heap was somewhat unusual for Zuñi ruins.

A small ruin is said to lie half a mile southeast of this one. Mr. R. J. Bauman, Superintendent of the Zuñi Reservation, informed us that there are a number of ruins in Horsehead Canyon including one or more small chiff houses, which from his description, appear to be similar to that east of Ramah, Site 125. We found it impossible to enter this canyon with a wagon, so that investigation of its archaeological resources had to be postponed indefinitely. There are several ruins at its upper end, called Soldado Canyon, which will be described later (p. 250).

- Site 72. Continuing eastward in the main valley several ruins were found along the foot of Attciatekyapoa,³ the big mesa bordering Horsehead Canyon on the east. The first is a mile above HeccotaLuptsinna: a single-roomed house north of the Pescado road. A random surface collection of sherds was made.
- Site 73. A similar ruin, a single room, is south of the road a short distance east. A random surface collection was made.
- Site 74. Half a mile east is a ruined house group, 100 by 20 feet, to the north of the road. A random surface collection was made.
- Site 75. Directly across the road from the last, and nearer the mesa, is another ruin, 55 feet by 20. A random collection of sherds was made from the surface of this ruin.

Sites 76 and 77. Three-quarters of a mile east of these ruins is another pair. Site 76 is a small house of two rooms, each 10 by 6 feet, a short distance south of the road. Site 77, which is nearer the road, is merely a confused mass of débris with but few sherds showing. A random surface collection was made at the first of these.

Site 78 — Hecota'utlla. Directly opposite the last two ruins Pescado



¹ ruin + yellow.

² Fewkes, (a), 112, Hesh-o-ta-sop-si-na; Bandeller, (b), 333, Heshota Thluctzinan; Simpson, (a), 117, evidently saw this ruin when less aggraded.

s atteiane, knife + tekyapoa, hill.

Creek swings close to the mesa on the northern border of the valley. At the eastern corner of the mesa is a large polygonal pueblo built on the narrow stretch of slightly sloping ground between the creek and the foot of the mesa. No break appears in the outer wall of the pueblo, which can still be roughly traced in its polygonal, almost circular, course. The east-west axis of the ruin is about 420 feet, the north-south axis about 350 feet. The interior contains other structures and refuse heaps, but a heavy scrub growth and much débris obscures their character.¹

The ruin was partially excavated in the winter of 1888 by members of the Hemenway Expedition; now none of the ash heaps located in the interior can be depended on for stratigraphic observations. A random collection of sherds was gathered from the surface, but these probably do not represent true conditions. The sherds seen here and the whole vessels figured by Fewkes closely resemble those of Hallonawa, both ruins being relatively recent from the standpoint of Zuñi ruins as a whole. We cannot agree with Fewkes ² on this evidence that the circular form of ruin is very old in the Pueblo area.

There may be several small ruins in the little canyon immeditely northeast of Hecota'utlla. There are certainly a number of them, at least fifteen, along the northern edge of the main valley from this point to the Pescado Springs. Some of these we have visited and their positions are indicated on the map.

Site 79. Half a mile south of Hecota'utlla stands a ruin in the middle of the valley. In its demolished condition it is L-shaped, the long wing 265 feet, the shorter 65 feet, each wing comprising a line of single rooms 8 feet wide. The site has been built on in recent times and a corral stands there now. Few sherds were seen.

Sites 80, 81, and 82. Directly south of this site a small canyon runs for three miles southward into the big mesa, Attciatekyapoa. Strung along the western side of the canyon close to the mesa are a number of small houses. There are ten of them within three-quarters of a mile of its mouth, and probably more further up. With the exception of the northernmost, Site 80, they are all apparently of similar construction and identical pottery types. Random collections were made from the surface of the first, Site 80, sixth, Site 81, and seventh, Site 82. Site 80 comprises two buildings, the first, 20 by 50 feet, perched on a little spur, the other, 10 by 60 feet, on the canyon floor a few feet below. Site 81 is a high pile of masonry 75 feet by 20, with a shallow depression 40 feet square contiguous to it. Site 82 is smaller, being 10 by 30 feet.



¹ Fewkes, (c); (a), 105-109 and plan; Bandelier, (b), 333.

² Fewkes, (c), 47.

Site 83. This is a much older ruin opposite Site 80 on the eastern side of the canyon. It is only a small ruin and but little masonry shows. Sherds were collected at random from the surface.

Another ruin lies a few feet north of this one: another alongside the road to the coal mine, half way up the mesa to the east. Four more lie near the foot of this mesa between this canyon and a similar one penetrating Attciate-kyapoa a mile east. All of these show sherds similar in type to Sites 81 and 82. We suspect the presence of small ruins in the latter canyon as well.

Site 84. At Pescado Springs, sixteen miles east of Zuñi, there are three large ruins. The largest lies west of the westerly spring. It is built on a basalt fault and probably conforms to some extent to the natural configuration. The ruin presents large heaps of masonry lying six to ten feet high, but it is overgrown with brush and stone has been removed from the walls for corrals and houses, so that its outline is obscured. However, it appears to be oval or polygonal, about 215 feet from east to west and about 150 feet on the short diameter. Basalt blocks formed a large part of the masonry. There are small ash heaps in the interior possibly a few feet deep.

Site 85. A smaller ruin, repeating the salient characteristics of that just described, lies adjacent to it a few steps northeast. Between the two a large spring gushes out of the lava fault. The smaller ruin approaches a circular shape, roughly 150 (?) feet in diameter. Buildings evidently followed the outer wall of the pueblo.

Site 86. About three hundred yards east of the westerly spring is the third pueblo ruin. It lies on top of the lava fault, which forms a little cliff twenty or thirty feet high. At its base the easterly springs percolate through the fault. The ruin is of irregular plan, roughly of the rectangular pueblo type but conforming to the shape of the cliff. Its over-all dimensions taken roughly along its major axes are perhaps 200 by 250 feet. The ruined walls now lie-in heaps about three or five feet high. They were composed mainly of basalt blocks, but included some sandstone.

There are numerous small ruins in the vicinity of the Pescado Springs, some of which we visited. There is one about a quarter-mile southwest of Site 84 and another was pointed out a like distance from this in the same direction. We suspect the presence of others along the western side of the canyon opening southward from this point. We are told that another small ruin was situated on a knoll at the eastern side of the mouth of this canyon.

Four small ruins, with the same general pottery types as the large ruins here, lie close under the cliff north of the springs. There probably are others there, and some may be found on the mesa.

¹ Simpson, (a), 118; Whipple, I, 65; Bandelier, (b), 333 as Heshota Tzinan.

Three-quarters of a mile northeast of Site 86 a small ruin lies in the open valley. Two others lie at the corner of the hill, half a mile east of this. There may be similar ruins along the hillside in the immediate vicinity of these. All of the small ruins have sherds of the same general type as the large ruins here.

Sites 87-89. Three-quarters of a mile east of Site 86 is a small ruin at the southeastern face of a low ridge; a quarter mile east of this is another and fully a mile east is a third. The ruins are all fairly well defined and measure 15 to 20 feet by 30 to 40 feet.

Site 90. A mile and a half east of Pescado Springs an open valley leads from the north. Three small ruins are located on the western slope of this. There may be others on the same side near its mouth. Half a mile in, that is, two miles by road from Pescado, is Site 90, a small bracket-shaped ruin 60 feet long with wings 40 feet long extending down the slope. The space between the wings is largely filled with débris. A random collection of sherds was obtained here.

Site 91. This small ruin lies on a spur over a mile north. It is L-shaped; the main section 36 by 12 feet and the other 45 by 6 feet. A random surface collection of sherds was made.

Site 92. Half a mile north on the same slope is the third ruin. It was a small house of two rooms, 10 by 20 feet outside dimensions. Sherds were gathered at random from the surface of this ruin.

Site 93-94. The Ramah-Gallup road runs northwest between the last two ruins. Three miles northwest of Site 92 is a small ruin a mile east of the road reported by Mr. Nelson. Another small ruin lies at the same distance from the road two miles further on.

Site 95. From the lower Nutria village a draw enters the low mesa toward the northwest. There is a small ruin on the ridge west of the draw: it is about three-quarters of a mile from the village. It may contain two rooms, the area covered by masonry being roughly 20 by 8 feet.

Site 96. Not quite half a mile northwest the ridge terminates in a little peak. Capping this is a mass of masonry débris of indefinite form: there may have been from six to twelve rooms here. Sherds were gathered at random from the surface of both of these ruins.

Midway between the ruins the road traversing the ridge passes through a mass of scattered stone and sherds which may have been another house.

It is surprising that more ruins are not to be found in the vicinity of the Nutria village. However, our search was by no means exhaustive. Mr. Nelson was told of a small ruin at or near the head of Nutria Creek. There is said to have been a small ruin in the fields south of the lower Nutria village many years ago.



Site 97. Heccotaimkoskwia.¹ Two miles southeast of the upper Nutria village is a large ruin. It lies in the junction of two arroyos in a little valley just west of a gap in the up-tilted sandstone ridge. That is, it is about three-quarters of a mile west of the Perea mail road. The main ruin is six-sided, of regular outline, and fully 350 by 280 feet in greatest dimensions (Fig. 5c). The outer building is two or three rooms wide evidently sloping toward the roughly rectangular court which is filled with low, irregularly distributed remains of structures possibly including two kivas. A section was cut in the refuse heap here.

East of this ruin is a circular wall of stone, 2 feet thick and about 90 feet in diameter. A room about 9 by 21 feet has been built against the north side and there are traces of rooms around the inside.

A small rectangular ruin lies about one hundred yards to the south. It measures 30 by 60 feet and is three rooms wide.

Sites 98-100. Three small ruins were reported by Mr. Nelson in the region south of Heccotaimkoskwia; the first one and a half miles due south, the second two miles further south, and the third a mile west of the second.

Sites 101-102. A large oval ruin lies on the Deracho property on the north side of the Pescado-Ramah Valley about two miles west of Ramah. Immediately above it on the mesa edge fifty feet higher is another building (Fig. 4a). The roughly circular ruin measures 225 by 175 feet on its diameters. The masonry is of sandstone fairly well laid in mud. The outer walls still stand four or five feet high although they have been largely removed for building purposes. The outer row of rooms appears to have been two or three stories high, the building being from three to eight rooms wide. One room measured 11 (?) by 10 feet 6 inches; another 10 feet 6 inches by 12 feet; while three rooms on the south side measured 30 feet together, i. e., about 9 feet per room. Basalt manos, metates, and mauls as well as potsherds were seen.

A long building of some thirty rooms lies along the edge of the mesa above the round ruin. It measures about 190 feet and for fifty feet of its length it is two rooms wide. The back or west walls are three or four feet high: the front wall comes out to the edge of the escarpment.²

Site 103. A small ruin is situated in a side canyon half a mile nearer Ramah on the same side of the valley and opposite Site 104. It is roughly bracket-shaped, 165 feet long with two arms each 45 feet long.

² Cf. Fewkes, (a), 113. There are some discrepancies between our measurements and Dr. Fewkes's. The circular depression in the plain referred to by Dr. Fewkes near the ruin must now be aggraded for we saw no noticeable feature of that kind. We cannot support Dr. Fewkes's suggestion that the upper structure is later than the oval ruin for the sherds seen at both were of the same type.



Bandelier, (b), 340 as Heshota In-kuosh-kuin.

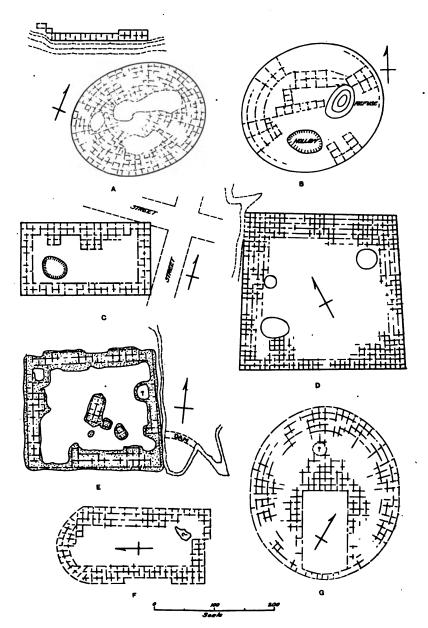


Fig. 4. Plans of Ruins: Ramah District. a, Ruins 101–102; b, Ruin 104; c, Ruin 111; d, Ruin 139; e, Ruin 110; f, Ruin 154; g, Ruin 141.

Another small ruin lies west of this on the top of the wooded hill between the Zuñi-Ramah road and the Zuñi-Ramah valley. It is 70 feet long, two rooms wide with a central part four rooms (36 feet) wide. Potsherds are scarce.

Site 104. Across the valley from the Deracho ruin, Site 101, but a quarter mile nearer Ramah is another ruin of the same type and size on the property of Mr. Day. This pueblo is oval, the outer wall being somewhat angular, not a smooth curve; its long diameter (east-west) is 240 feet and short diameter 204 feet (Fig. 4b). The outer wall is barely visible much of it having been removed to the débris level for building stone, but it still stands in part to a height of five or six feet. The masonry, of sandstone set in mud, is ordinary. The circular building is from one to three rooms wide with houses scattered about the court. Room sizes were 9 by 13 feet and 9 by 12 feet. There is a hollow in the southeast side of the court and a refuse heap in the opposite quarter. In this a section was dug to the original surface at a depth of 7 feet.

Site 105. A short distance east of this pueblo is a small ruin.

Sites 106-109. Four small ruins lie two miles south along the ridge south of the Ramah-Pescado Valley.

Site 110. Six miles west of south of Ramah and about five southeast of the Pescado Springs is a large ruin, roughly rectangular and about 200 feet square (Fig. 4e). The buildings around the roughly rectangular court are not of even width. In the court are several small isolated buildings. The sandstone walls still stand about 6 feet high in the building on the north side; the others from 1 to 4 feet high. Only a few sherds were found here. Large piñon and cedar trees have grown over the ruin. To the southeast a dam has been thrown across a gulch formed by a drop in the swale.

Site 111. In the town of Ramah there is a rectangular ruin standing on the property of Mr. Jess Johnson north of the schoolhouse. The pueblo is of rectangular groundplan, 215 by 120 feet, with a wing extending from the north side into the court (Fig. 4c). The building was evidently two stories high on the outer row of rooms, but apparently only two rooms wide except in one or two places.

Site 112. There is a small ruin between Ramah and the reservoir on the southern side of the valley.

Sites 113-117. Situated on the ridge facing the Ramah reservoir and dam, or rather directly opposite the point of the high cliff north of the reservoir, are two ruins and between them another lies one hundred feet down the eastern slope. All are built of sandstone laid in mud; rather rectangular in plan; probably not over one story high, although the rear set of rooms may have had two stories. The back of the ruins thus faced

the prevailing westerly winds. The northern ruin is about 100 feet or eight rooms long and 22 feet wide. The central ruin is L-shaped, the long arm 100 feet or nine rooms long and the other 45 feet long and extending eastward from this is a wall enclosing a court about 30 by 80 feet. The southern ruin has an arm two rooms long at one end, and in the angle, a round kiva. This ruin seems to have had a low addition partway along the west side: Sherds were collected from the surface here.

Two other small ruins are located nearby.

Site 118. Half a mile south of Ramah and a quarter mile west of Vogt's house is a small ruin on the slope east of the Ramah fields. It is bracket-shaped, 75 feet long with two arms of 30 and 27 feet. The construction is fairly regular, the building and arms two rooms wide, and facing southeast. A room on the northeast side is about 6 by 9 feet. Sherds, flint, lava manos, flint hammerstones, etc., are to be seen.

Site 119. In front of Vogt's house, a mile or more south of Ramah, a small ruin lies partly on the bottom of the ravine and partly on the rock ledge enclosing the ravine. The building is 60 feet long with a western arm of 33 feet. On its eastern end is another structure of a few rooms possibly 36 feet long. There is some slight trace of refuse, but the whole is very indistinct.

Site 120. Two ruins lie on the rocky slope northeast of Vogt's house. The first 400 feet or more east of the house is a small ruin of undressed sandstone laid in mud. There are two buildings, the first two rooms wide, 65 feet long by 18 feet wide; the second at right angles to it on the southwest, 55 feet long and three rooms wide. A single room lies southeast of the first building and just inside the gap between the two buildings is a rectangular box-like construction of upright slabs about 2 feet square and 1 foot 6 inches deep. A room excavated in the first building measured 7 feet along the east wall, 7 feet 4 inches west, 11 feet 1 inch north and 11 feet 3 inches south; the wall stood 2 or 3 feet high; the floor was partly flagged; and a lined fireplace 17 by 18 inches was on the south side. A piñon tree on the ruin measured 3 feet 5 inches in circumference.

The second ruin lies 150 yards north of the first. It is a single house built of sandstone, of regular construction 75 feet long, 24 feet wide except for a short distance at the west end where there was only a single line of rooms about 6 feet wide. Part of a stone ring, such as formed the coping to the hatchway in the roof of the ancient houses, lay nearby.

Site 121. A small ruin lies a short distance east of Vogt's house in the ravine opening from Josepina Canyon. It is constructed of stone and quite regular, being 106 feet or about nine rooms long by 24 feet wide; at the western end an arm 42 feet long extends down the slope to the south. We



are indebted to Mrs. Nelson for a section of the noticeable refuse heap in front of this building.

Site 122. A small side canyon heads toward the northeast from this ravine about half a mile east of Vogt's house. Three ruins lie along its western slope facing east or southeast. The first ruin is of regular construction, 75 feet long by 35 feet wide with two arms of a room or two each at both ends.

Site 123. About two hundred feet east of Site 122 is another single building constructed of sandstone. It is about six rooms long and 18 or 20 feet wide. Some sherds show here.

Site 124. The last ruin up this side canyon lies on the hill slope but near its base. It is L-shaped, the two arms each about 30 feet long, but without a room in the outside corner where they join. While the ruin is apparently regular in shape its character cannot be certainly ascertained without excavation. One room dug into shows a good wall of selected and probably partly dressed sandstone blocks, more or less even in size, with some chinking. Part of a stone ring, diameters 15 and 30 inches, similar to that found at Site 120, was lying nearby.

Site 125. Turning south into Josepina Canyon for half a mile, a small cliff house 1 is seen on the left. On an upper rock ledge is a building of a few rooms. Another building lies at the base of the escarpment on the talus slope immediately below this: it contains four or five rooms at most. One room excavated to a depth of 4 feet gave dimensions of 7 feet 10 inches by 12 feet, with good walls of stone set in mud plaster. Here manos, metates, a grooved maul, corncobs, turkey bones, and potsherds were found. A small house of three or four rooms lay on the valley floor just below. All the buildings are evidently of the same age.

Sites 126-137. Beginning across the ravine from Vogt's house and extending along the south side of the ravine and the west side of Josepina Canyon for almost two miles is a series of thirteen ruins. Three others lie still further east on the north side of the pass to Cebollita. These are all small ruins, probably all of about the same age.

Site 138. A composite ruin lies about three and a half miles southeast of Ramah at a place called "Cebollita" in the pass between Josepina Canyon and the broad valley at the foot of the Zuñi Mountains. The ruin lies on a low sandy knoll rising from fertile meadows. The western section is nearly square (375 by 350 feet), the eastern is octagonal or possibly ninesided, i. e., nearly circular (180 feet diameter) and between them there appears to be a connecting ruin partly covered by sand and possibly by

¹ Fewkes, (a), 116.

village débris (Fig. 5f). The circular section stands higher than the rectangular portion and appears to be a later construction.¹ A large dam was formerly thrown across the swale here.

Site 139 — Pueblo de los Muertos. This ruin is situated five miles north of east of Cebollita and eight miles due east of Ramah. It lies on the eastern bank of a living stream flowing from the foothills of the Zuñi Mountains and just below the notch in that range. The stream is distinctly marked by a long line of oak trees. This is a large rectangular pueblo built on the level ground on the bank of the stream. It is approximately 260 feet square (Fig. 4d); the buildings being two to five or more rooms wide; evidently highest on the outside and sloping toward the court. At certain points the building appears to have been higher than elsewhere. It is built of slabs and blocks of sandstone partly dressed by pecking (?). Rooms are 6 feet by 5 feet 8 inches and 6 feet 8 inches square. Some structures in the court appear to be separate from the outer buildings. The existence of kivas is uncertain although there are suggestive depressions in the court. Refuse piles thrown up at various points on the ruin would indicate that it was occupied for some time, but a section in a refuse pile outside to the southeast reached the original surface at a depth of only 1 foot 6 inches. While potsherds are rather scarce about the ruin, broken stone axes, hammerstones, sandstone and basalt manos and metates, and chert arrow points were seen.

Site 140 — Cienega." It is five miles north of Inscription Rock, in line with the notches in the Zuñi Range; its location marked by a corral and sand dunes. The ruin is built of lava blocks and some sandstone around an irregular court and measures roughly 450 by 350 feet over all. There is some evidence that in its shape it conforms to natural features, nevertheless it approximates an oval in plan. In the southwest corner of the court is a deep water-hole fed by a spring and confined by a low wall 50 feet in diameter. A large block of basalt is set up in the court southwest of the water-hole. Sandstone manos, flint, and obsidian were seen. Ash heaps are an uncertain quantity due to the shifting dunes of sand. However, a section was made in the refuse on the west side of the court to the original level at a depth of 7 feet below the present surface and another was made similarly to a depth of 3 feet 6 inches outside the ruin to the south.

Site 141. About two hundred yards southwest of Site 140 is another



¹ Fewkes, (a), 114–116, as Pipkin's Ruin. A number of Dr. Fewkes's measurements differ considerably from our own. Evidently an error in his notes, giving the diameter of the circular ruin as "thirty feet" led him to suggest its possible use as a kiva: a kiva of 180 feet diameter is of course out of the question.

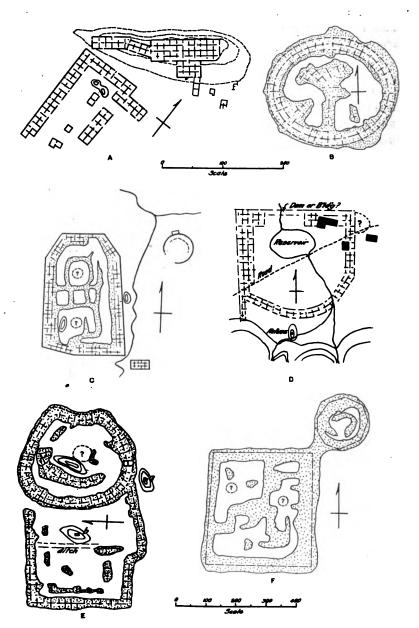


Fig. 5. Plans of Ruins: Ramah and Plateau Districts. a, Ruin 144; b, Ruin 162; c, Ruin 97; d, Ruin 153; e, Ruin 161; f, Ruin 138.

ruin, roughly oval in outline (Fig. 4g) about 245 by 290 feet. It is less prominent than the preceding ruin, its reduction being due to age or possibly to artificial causes. The main house section appears to have been on the north side, for there are traces of walls over that half of the court and on the east and west sides, but for a space on the south side there is only one row of rooms. One room was opened to the adobe (?) floor at a depth of about 4 feet: the walls were of good type and a fireplace was found against the north wall near the northwest corner. In the room were hammerstones, animal bones, and cooking pottery. Sherds are comparatively scarce on the ruin. There is some slight trace of refuse on the east side.

Mr. Gore, of Ramah, saw two small ruins of about six rooms each in the valley south of Cienega. Sherds were also noticed about half a mile to the west.

Site 142. A Mexican herder made a positive statement that there was a medium-sized ruin located about "one and a half miles" northeast of Cienega: but Mr. Nelson could not find it. The site should be in the next draw or valley east of the Pueblo de los Muertos Valley.

Site 143. Thirteen miles south of east of Ramah is the Mexican settlement Tinaja on the ranch of Mr. Leopoldo Mazón. The remains of a ruin are situated on a slight knoll by the chapel and cemetery about one-quarter mile west of the ranch house. The place has been built on by Mexicans, stones having been removed from the ruin, and it is consequently partly covered up and obscured. However, part of the ruin appears at the north end of the knoll near the chapel and another part appears at the south end near the reservoirs. While the location seems excellent so far as can be judged, the pueblo was not extensive. Few potsherds were found.

Site 144. About a mile and a half southeast of the ranch house and immediately south of the Agua Fria road is a low rock rising from the sandy flat valley bottom. The knoll or rock is about 35 feet high, about 250 feet long and perhaps 75 feet wide, dropping precipitously on the west but sloping to the east. Ruins lie partly on top of the rock and also below to the east and to the southeast (Fig. 5a). The building on the rock is 100 feet long and the largest below has two arms 180 feet and 100 feet long. These are built of sandstone laid in mud. Rooms measure about 7 by 9 feet, 7 by 10 feet, etc.

Site 145. Two small ruins are said to lie near the sandstone pinnacles, "Gigantes", six miles southeast of Ramah.

Site 146 — Gigantes. There is a ruin named for the pinnacles on the mesa a mile southeast, i. e., three miles northwest of Inscription Rock. This mesa is divided by a deep canyon heading into it from the west and leaving only a thin sheer wall of sandstone at its eastern face. Resting against the



inner or western face of this thin wall is a high conical talus slope on top of which is perched a ruin of irregular shape measuring roughly 170 by 125 feet. The sandstone wall is pierced at the level of the ruin by a "window," which one hundred feet or more above the base of the cliff on its eastern face, affords a magnificent view of the broad valley along the foot of the Zuñi Range. With adequate food and water the site could not be bettered from the standpoint of defense. An excavated room measured about 4 feet 6 inches by 8 feet: the well-laid walls of sandstone in adobe stood 7 to 8 feet high. Refuse extending down the slope into the canyon to the west gave a section 4 feet deep.

Site 147. Two small ruins lie at the southern corner of the mesa and there is possibly another on the valley floor immediately below these.

Site 148 — Inscription Rock. Ten miles southeast of Ramah, Inscription Rock, or El Morro, rises sheer from the plain. The famous inscriptions are at the base of the northeast angle and immediately above on the mesa top are three ruins. Two are large and prominent and have been previously visited and described. Close to the northern edge of the mesa is a rectangular ruin, measuring roughly 160 by 100 feet. The back (north) wall of squared, even, large blocks of sandstone stands 6 feet high. The north, east, and west sides are two or three rooms wide, with the outer row of rooms highest.

Site 149. Just south of this ruin a deep and narrow gorge enters the rock from the west dividing it almost in two. On the opposite, or southern, side of the gorge is the larger of the two ruins, measuring about 300 by 210 feet. This ruin presents the general outline of two concentric rectangles. The "outer" building is but two rooms wide, and a deep trough extends along all but the southern side between the "outer" and "inner" buildings. A small section was made in the ash heap southeast of the ruin.

Site 150. The third ruin eluded the scrutiny of all previous investigators, and was discovered by Mrs. Nelson only after our outfit had left the vicinity of the rock. It lies to the west of the northern rectangular ruin. It is extensive and low, and seems to be more ancient than the other two.

Site 151. Inscription Rock rises sheer from the plain on the north but slopes gradually down to the south and west. Along the east side are half a dozen small ruins extending for perhaps two miles.

Site 152. A mile or more east are two more small ruins near an abandoned ranch house.

Site 153. Ojo Pueblo is roughly fifteen miles or more due south of

¹ Simpson, (a), 120 and Plate 63; Whipple, I, 64, and III, 22; Möllhausen, 74; Bande-tier, (b), 328; Fewkes, (a), 117.

Ramah and about six miles southeast of the corner of the National Forest. Here is a large ruin seen by Mr. Nelson. It is D-shaped, roughly 400 by 350 feet, situated in the mouth of a draw on the south side of the main valley, the north side of the building being on the edge of the bottom land (Fig. 5d). The ruin as a whole is low and overgrown with weeds. The walls stand from 1 to 4 feet high, and while not much of it is exposed, the masonry appears to be fairly well made of good-sized undressed sandstone blocks laid in mud. Several modern structures stand on the ruin. Very little refuse shows, only a few bits of pottery on the surface.

Site 154. About three-quarters of a mile southeast of Shoemaker's ranch house (three miles or so west of Ojo Pueblo) is a narrow rocky ridge formed by a saddle in a mesa. Here at the western end in the timber is a large ruin with standing walls. The ruin is roughly rectangular, about 225 by 150 feet (Fig. 4 f). It is built of sandstone blocks; those in the upper part of the outer wall are partly dressed on the face and seemingly squared by strokes of a stone chisel (?). The outer wall is practically of double thickness, more than two feet through, but the two walls are not very well bound together. Mr. Nelson's notes add that there are a few doors partly intact, with lintels of split rails. Rooms average 6 by 15 feet or more. Trees now stand on the ruin. A collection of sherds was made here.

Site 155. West of this ruin are two smaller ruins. They are built of stone, but are now shapeless heaps. The pottery is apparently older than that of the larger ruin, with a smaller percentage of redware.

Site 156. Three small ruins lie near the Shoemaker ranch house (Township 8, Range 16, Section 4). Another and larger lies on top of a small rocky mesa back of the house. It is really a fortification, perhaps 100 by 150 feet, on the talus and two terraces above.

Site 157. A group of seven or more small ruins lies along the canyon at Ojo Hallado, somewhere about four miles west of the Shoemaker ranch. They are all within a mile radius of the Garcia ranch, the buildings of which occupy one of sites. Of the two nearest the Garcia house, one is 50 by 25 feet, the other L-shaped, 35 by 25 feet, with two curious embankments projecting from it suggesting a dam.

Site 158. Two small ruins are situated three miles northwest of Ojo Hallado on the road to the ranch of Jesus Deracho. One at the foot of the mesa was seen; the other on top is located by report only.

Site 159. About three miles north of Ojo Hallado is the Miller ranch fifteen miles by road south of Ramah. Fully a dozen small ruins are scattered along the valley for a mile or two north and south of the ranch house and on the ridge above. They appear to be all of about the same age, though with a little range, but neither of the earliest nor latest periods. The



majority are six to ten room buildings; straight, L, and bracket-shaped: usually facing in a southerly direction. One on top of the ridge behind the Miller house is L-shaped, about 240 feet by 60; the long arm is only one or two rooms wide; the short arm is four rooms wide.

Site 160. Two miles northeast of the ranch house are three small ruins on the ridge. Two lie near a spring draining into Soldado Canyon. All are built of stone and lichen-covered. Potsherds are scarce.

Site 161. Crossing this ridge northwest of the Miller ranch, one descends after traveling about three miles into Soldado Canyon. This is an extension of the deep Horsehead Canyon penetrating far southward into the plateau from the main Zuñi Valley. Near the head of the canyon stands a large composite ruin 1; its juxtaposition of rectangular and circular pueblos resembling that at Cebollita near Ramah. The rectangular portion is roughly 350 feet or more square; the circular about 325 feet in diameter (Fig. 5e). Part of the outer wall of the circular ruin still stands. Like the other walls it is built of sandstone laid in mud, and above the height of four or five feet the blocks are partly dressed. The encircling houses are one or two and possibly three rooms wide. The outer wall is 2 feet 3 inches thick in its basal part, and 1 foot 2 inches in the upper portion; the middle wall measures 1 foot 6 inches and the inner wall 1 foot 4 inches. Refuse heaps from one to four feet high, occur both inside and outside of the courts. Sherds were taken from a section inside the rectangular court (161-b) and from another outside near the circular ruin (161-a).

Site 162. More than a mile down Soldado Canyon is another pueblo ruin placed on a low spur on the south side of the valley and opposite a small side canyon. It is said to lie exactly on the Zuñi Reservation line. It is oval with diameters of 210 and 180 feet (Fig. 5b). The ruin has fine standing walls and is in a better condition of preservation than any other ruin in the region despite acts of vandalism said to have been committed by a former Indian agent. It is built of sandstone laid in mud, with some chinking. The outer wall of large rectangular blocks, partly dressed, stands 5 to 10 feet high. It was formerly two, and possibly three, stories high. This wall presents no sharp angles, yet it is not quite a smooth curve. The pueblo is more compact than the similar structure in the composite ruin further up the canyon. Some irregular buildings stand in the court with

¹ Fewkes, (a), 119-126, describes this ruin and Site 162 under the name Ar-che-o-tek-o-pa. It should be noted that this is not a correct designation for the canyon in which the ruin stands, since Atteiatekyapoa (atteiane, knife and tekyapoa, hill) is the Zufii name for that section of the Zufii plateau forming the eastern side of Horsehead Canyon. Dr. Fewkes identifies this ruin and that a mile north with the "Marata" of Castafieda's report, although his reason for so doing is not stated. The pottery from this ruin is not of historic type. The assumption that both parts of the ruin were occupied simultaneously will be considered later.

some of the walls apparently on radial lines. No refuse heaps of any account were found although there is débris here and there in the court.

Site 163. Somewhere to the west after following the road from Jesus ranch toward Zuñi for about eight miles we came on several small ruins near a reservoir and Zuñi farmhouse. These must lie near the Zuñi Reservation line. Possibly they are the ruins called *Tekyapoa* (hill). A collection of sherds was taken at random from that nearest the reservoir.

Site 164—Cuminnkya. This ruin, or rather group of ruins, lies at the head of a valley seven or more miles southeast of Ojo Caliente. The Zuñi Buttes can be distinctly seen from this point bearing about N-15°-W from this place. The houses are scattered over an irregular ridge. They are all small; one L-shaped, measures 55 by 30 feet. A random collection of sherds was made here.

A circular ruin is said to lie a mile to the south close under a big red mesa. Site 165. Two house ruins of one or two rooms each lie at the foot of a low mesa in the fork of the arroyos in the valley about three miles southwest of Cuminnkya. A random collection was made.

Site 166. Half a mile or so down the valley and the same distance up the slope to the north is a low small ruin. Only two rooms show; the whole measuring 25 by 10 feet. The stone has been carried away to the ranch house of Francisco Utima nearby. All sherds seen were picked up.

There are said to be other small ruins down the valley near the Garcia ranch.

Site 167. Half a mile up the slope from the last site is another on the summit. The ruin is a small place of only a few rooms. A random collection of sherds was made here.



POTSHERD SAMPLES.

It cannot be doubted that the pottery art in the Southwest has run a long and varied course. It is an art with a wealth of details and to the extent to which nice discriminations in technique can be made, equally fine discriminations can be made in its fluctuating phases. It would be fatuous to emphasize here the importance of pottery for establishing a chronology of Southwestern ruins. But if we know the history of the pottery art, though only in its barest outlines, we know at once the time-relations between the ruins. Simply to state the sequence of their occupation is to tell in lowest terms of the migrations of their erstwhile occupants. Migration records are but little more than suggestive indications of former intertribal relations, and for just this reason seem to be the urgent need in preparing a background for ethnological study in the Southwest. In the present study we have confined our attention simply to this point.

Needless to say this type of study requires none of the intensive excavation necessary for the elaboration of the course of minor cultural events. It is amenable to methods possible to a reconnaissance survey. Inasmuch as several distinct methods had been indicated before the present study was undertaken, it seems advisable to discuss briefly their application to our problem.

Three methods were published almost simultaneously by Messrs. Kidder, Kroeber, and Nelson. They may be characterized respectively, as the hypothetical seriation of several pottery techniques, the hypothetical ranking of surface finds and the observation of concurrent variations, and stratigraphic observation of refuse heaps.

Dr. Kidder's method ¹ rests on the association of four different wares with ruins of varying size and degree of obliteration, on their varying perfection of technique and design, and on the extent of their distribution. With great plausibility, he tentatively ranked the wares on the basis of the combination of these factors. While the results of such a procedure are always suggestive, the objections to it are obvious. And further, wherever such a method is applicable, the methods which follow are equally applicable and certainly more productive of valid results.

Dr. Kroeber's method is outlined in the earlier pages of this volume 2

¹ Kidder, (a).

Part I.

on the basis of his experience with collections of sherds taken from the surface of ruins in the vicinity of Zuñi. Dr. Kroeber found that two general types of pottery could be distinguished. Further that sherds from any particular ruin belonged to one class only. He was thus able to distinguish two groups of ruins corresponding to the two types. Their relation in time was clearly indicated when it was noted that one group included sites occupied according to historical records and native tradition in the sixteenth A further analysis of the general types into their constituents, distinguished on the basis of color, suggested the division of the two general periods into minor sub-periods. Ranking these sub-periods, or rather the data for the individual ruins, by the proportion of one of the constituents. a partial confirmation of the validity of the sequence was suggested by concurrent variations in the associated constituents. A fundamental objection to Dr. Kroeber's method could be based on the quality of the original data, which obviously depends entirely on the ability of the investigator to collect a sample of potsherds at random and not by selection.

Mr. Nelson's method of stratigraphic observations on refuse heaps in needs no extensive comment. It is patent that the refuse heaps of every ruin contain the superposed remnants of the successive pottery styles used there, and that starting at ruins of known historical provenience we are able to trace back the successive phases of the art. More specifically Mr. Nelson's contribution consists in demonstrating the practicability of obtaining samples of sherds at random from the successive levels of the heap, and by determining the proportions of the constituent wares at each level indicating the course of the pottery art. This method is strikingly direct and entirely eliminates the error of selection, but it is only applicable to refuse heaps of considerable depth.

Obviously the last method is the most advantageous, but its applicability to the Zuñi ruins was strictly limited by the shallowness of the refuse heaps at most of the ruins. Stratigraphic observations were possible at only five of the one hundred ruins on the Zuñi Reservation,² for example. This is in itself a fact of some significance, for the necessary deduction is that the occupation of the ruins, large and small, was transitory. Fortunately, we were able to obtain good evidence connecting the pottery of Zuñi itself with Mattsakya, an historic pueblo, and Pinnawa, a prehistoric ruin, in each of which deep refuse deposits were found. For the rest Dr. Kroeber's method alone was applicable. We have therefore been forced to combine both methods in the present inquiry giving preference wherever

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Five other ruins would probably have yielded results.

possible to the stratigraphic results. Our method of utilizing such results will be discussed after reviewing the data obtained.

It seems pertinent to inquire into the accuracy of the data obtained by the two methods. We may formulate the following questions: To what extent does a series obtained from a refuse heap represent the true sequence of types? Can we obtain a random sample of sherds by collecting from the surface of a ruin? To this end we excavated two independent sections in the refuse heaps along the eastern slope of Mattsakya, Site 48 (a ruin chosen, of course, at random). How closely these agree may be seen by inspecting the table below (p. 258). The agreement between the sections seems to be as close as may reasonably be expected, the magnitude of the deviations being relatively small and well within the range of accidental variation. This point comes out more emphatically by comparing each series with the mean series (p. 278), when it will be seen that the deviations of each series from the average have a random distribution, there being no preponderance of values on one side of the average or the other. To put the second question to the test, we compared a surface sample supposedly collected at random with a truely random sample obtained immediately below the surface. Thus, we have compared the surface sample obtained at Mattsakya by Dr. Kroeber in 1915 with the sherds from the first level obtained by the writer (p. 278). We have of necessity ignored the fact that the two samples may not be coeval, but the difference in time is probably slight. The correspondence between the samples is quite close, and as in the case of the compared sections the differences are evidently accidental. In fact the differences are well within the range of variation exhibited by any two corresponding random samples in the series. A fairer test of this point would be the comparison of two samples made independently by one collector on the surface of a single ruin. We made such a test at least twice while in the field, but as the results are not at hand, we can simply state that the correspondences were similar to that above.

Pottery was obtained at most of the ruins seen. For the most part only fragments were available as no extensive excavations were made. While the absence of many complete vessels from our collection sets a definite limit on the description of the pottery wares, the preceding statements must have made it clear that this fact has but little influence on an inquiry into the sequence of the wares. Still it may be claimed that the lack of whole vessels would make an analysis of a sample of sherds into its constituent wares impossible; yet anyone who has handled material of this

¹ The reader must be cautioned that such a comparison of samples obtained by different investigators does not include the differences due to personal bias since one of the samples is certainly a random collection.

sort will readily recognize that this objection is chiefly academic. It is simply a matter of experience that the variety of wares at a ruin is very limited and that sherds may be recognized without much difficulty. Indeed the fact that we have in the Zuñi region close parallels to the wares of the Tano, as determined by Nelson, rendered the segregation into classes conspicuously easy.

This brings us to a description of the chief classes into which these wares have been divided. We feel justified in abandoning Dr. Kroeber's twofold classification, for as he himself asserts, the very fact that subdivision is possible indicates that there has been "a steady continuous development on the soil." More particularly, we feel the necessity of abandoning the principle of classifying each sherd on the basis of its particular color in favor of a classification according to the several distinct wares. Surely such a classification more adequately represents the facts. However, the essential correctness of Dr. Kroeber's results cannot be doubted. The explanation for the close agreement between the results from the two methods lies simply in the small number of techniques and color combinations involved.

We have made our general classification of wares conform to those worked out by Nelson for the Tano region ¹ in order to render the results directly comparable. This has been made possible, as we have already intimated, by the very close parallelism in development in the two regions. There can be very little doubt that the sequence of techniques in the Zuñi Region has been painted ware, glazed ware, combination glazed and painted ware, and finally painted ware of a distinctly modern type. On the other hand, the color combinations are somewhat simpler, for we find only three ground or body colors in use, white, red, and buff. In addition to these wares with painted decoration, we find two other types, corrugated ware and a coarse, plain, unsized, undecorated black ware. We have therefore divided the wares first on the basis of technique and secondarily on the basis of body or ground color.

In the following table we have indicated the proportions of the various wares present at each site by percentages. In the first column is the number designating the ruin in the list above, and the depths of the samples wherever stratigraphic sections were made. In the second to fifteenth columns the percentages of corrugated, black and painted wares are indicated, and in the last column the number of sherds in the sample analyzed.

¹ Nelson.

Size of Sample

Site

Buff

TABLE I.

Three Color Glased and Painted Ware White Buff Two Color Glazed Ware Red PERCENTAGES OF POTTERY WARES PRESENT AT RUINS. White Buff Three Color Painted 2 Ware Red White Buff Two Color Painted Ware Be 22 White : Black **4** 2 **2 6** Corre

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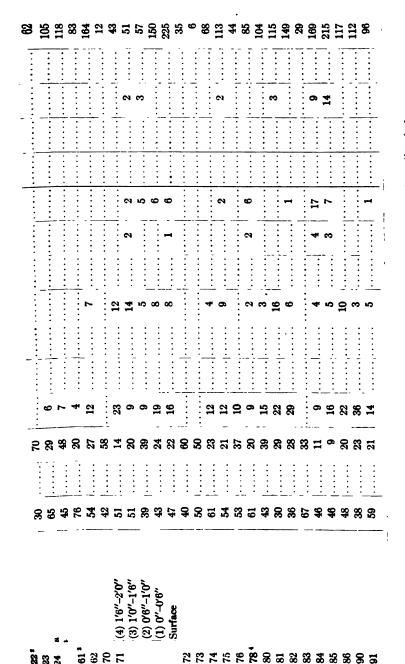
¹ This figure represents the proportion of sherds bearing corrugations, but inasmuch as the body of the vessel was not corrugated, it does not represent the proportion of corrugated ware present. No method of determining that proportion occurs to us.

² Our recollection is that a few red sherds were seen at this ruin, but were by accident not included in this sample.

TABLE I (Continued).

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(6) 2'6"-3'0"	-	53	9	1	20	9	:		∞	-	-	-:	•	:	146
(5) 2'0"-2'6"	-	4	7	C)	83	61	:	Ç1	:	2	2	6	-	7	145
(4) 1'6"-2'0"	. .	51	9	:	18	9	:	4	∞	က	_	:	:	:	119
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The full depth of Section II was 5'-6" below the surface, but the last 6" level, 5'-0" to 5'6", had been disturbed. Sample collected by Dr. Kroeber, second visit, 1915 (50.1-9302). See pp. 16 and 23.

This is not a random sample but was collected, in part, by Governor Lewis. The percentages, therefore, do not represent the true

· Due to the disturbed condition of this ruin, Hecota' utila, a true random sample could not be obtained. These percentages therefore do not represent the correct proportions, but are given here merely to indicate the types present at this ruin

TABLE I — (Continued).

Buff	(b) 2'0'-2'6'' 8 (5) 12 (1) 5'-0' 10'' 10'' 10'' 10'' 10'' 10'' 10''		Site	Corru	Corru- Black gated		Two Color Painted Ware	inted	Three	Three Color Painted Ware	ainted	2	Two Color Glased Ware	lased	Three	Three Color Glazed and Painted Ware		Size of
(6) 2'0''-2'6'' 38 35 20 26 4 4 5 5 12 3 3 1 23 3 1 23 3 1 23 8 8 5 0 34 4 1 13 1 13 1 13 1 13 1 13 1 13 1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	ļ		,		White	Red		White	!	Buff	White	1	Buff	White	Red	. 8-4	
(6) 2'0"-2'6" 38 131 23 8 4 4 4 131 23 8 8 50 34 (4) 10"-1'6" 44 21 13 133 133 13 13 13 13 13 13 13 13 13	(6) 2'0'-2'6'	81		3	-	ક્ષ	8			2								۽ اُ
(6) 2'0'-2'6''	(b) 2'0'-2'6" (c) 1'0'-2'6" (d) 1'0'-1'6" (e) 1'0'-1'6" (e) 1'0'-1'6" (f) 1'0'-1'6" (g) 1'-0'' (g) 4' (g) 1'-0'' (g) 6' (g) 1'-0'' (g) 6'	ະດ		8		25	15			64	_			: : -				2 ;
(6) 2'0''-2'6'' 38 12 3 8 5 9 34 (4) 10''-1'6'' 44 21 13 13 13 13 13 13 13 13 13 13 13 13 13	(6) 20"-26" 38 31 23 4 4 31 34 34 34 34 34 34 34 34 34 34 34 34 34	•		2		8	g		:	,	:	·	:	:	:	:		116
(5) 10, 20, 20, 30, 31, 25, 34, 41, 10, 21, 10, 20, 20, 34, 44, 21, 13, 13, 13, 13, 13, 13, 13, 13, 13, 1	(b) 16"-20" (c) 16"-20" (d) 10"-16" (d) 10"-16" (e) 10"-10" (e) 10"-10" (f) 10"-10" (g) 6"-10" (g) 6"-10"		8) 9/0/, 9/8//	3 8		3 5	9 8	:	:	4 0	:		:		:	:	:	136
(4) 1'0'-1'6'' (5) 1'0'-2'0'' (6) 1'0'-1'6'' (7) 3'0'6''-1'0'' (8) 3'0'6''-1'0'' (9) 4'-0'' to 5'-0'' (10) 4'6'' to 5'-0'' (11) 5'-0'' to 4'-6'' (12) 5'-6'' to 5'-0'' (13) 6'' to 1'-6'' (14) 1'-6'' to 2'-0'' (15) 5'-0'' to 2'-6'' (16) 6'' to 1'-6'' (17) 3'-0'' to 1'-6'' (18) 1'-6'' to 2'-0'' (19) 1'-6'' to 2'-0'' (10) 1'-6'' to 2'-0'' (10) 1'-6'' to 2'-0'' (10) 1'-6'' to 2'-0'' (10) 1'-6'' to 2'-0'' (10) 1'-6'' to 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6'' (10) 1'-6	(a) 1'6'-2'0' (b) 1'6'-2'0' (c) 1'0''-16'' (d) 1'0''-16'' (e) 2'-6'' to 6'-0' (f) 3'-6'' to 6'-0' (g) 4'-0' to 4'-6'' (g) 4'-0' to 4'-6'' (g) 4'-0' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 4'-6'' to 2'-6'' (g) 5'' to 2'-6'' (g) 6''' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7'' to 2'-6'' (g) 7		0 7 - 0 7 (0	\$ '	:	31	3	:	 :: ::	20	:	:	:			:	:	13
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(8) 3,6"-4,0"		8	8		. ::	21	- <u>:</u>	· :	9	<u>:</u> :	- :	9	:	:
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(2) 6"-1"0"		12	11	:	31 ::	<u>:</u>	<u>:</u> :	:	 6		<u>:</u> :	<u>:</u> :	:	:
(1) 0"-6"		15	ଛ		≈ :		<u>:</u> :	- - -			:	-	:	 :
152 (6) 2'0'-2'6"		86	ç		_		_		•					

TABLE 1 — (Concluded).

	Site	Corru-	Black	Two (Two Culor Painted Ware	inted	Three	Three Culur Painted Ware	ainted	Two Per	Two Calar (Ilnsee) Ware	n seri	Three	Three Color Olased and Painted Ware	laned Nare	Manual Service
				White	Ked Ked	Buff.	White Red Buff White Red Buff	ž	Buff	White	Red - Nuff	Huff	White	Had had	Find	
25	(5) 1'6"-2'0"	! 3 5.	· 31	5	, -:		2	:	: :	~		:	:		-	-ਜ
	(4) 1'0"-1'6"	23	91	ž		:	93	:		23	:		æ			<i>5</i> 4.
. u	(3) 6"-1'0"	92	7	2	:		S	:		-	•		71		:	~
ت ر	(3) 0,,-6,,	\$	91	90	• •	•	+	:		•	٠.		-			z
161a (?	(8) 3'0''-3'6"	20	?}	=			æ	:	=	77	:		:			<i>≅</i>
	(7) 2'6"-3'0"	55	7,	4	:		11	:		•		:	:		:	75
. ∈	(8) 2'0''-2'6''	25	81	11	•	:	33		•	•			=	•		₹.
. <u> </u>	(5) 1'6"-2'0"	39	40	ដ		:	ĸ	•	:	* C	:		:			77
ت	(4) 1,0,,-1,8,,	\$	×	ĭ	:	•	=	:	:	=	:		75		:	=i
ت .	(3) 6"-1'0"	25	<u>+</u>	ş	- : :		ĸ	•	တ		:	:	:		:	<i>∓</i> :
ت	(2) 0"-6"	97	ş	82	- :	:	22	•	23	•	:		:		٠	=
161b (.	(4) 1,0,,-1,8,,	17	2	<u>;</u> }	-	:	2	•	တ	7			*			<u>-</u>
···	(3) 6"-1'0"	7	દ્ભ	ş		:	2	:	:	?1	:					2
ت	(5) 0'6''	84	នុ	91	:	:	2	:	-	?1	:				:	끌
3	•	36	:	30	S	:	:		:	•				:		茶
3		62	:	88	2	:	•		•		-			:		Ξ
65		45	:	8	?			•		•	:					Ξ
99		\$	•	25				-					-			#
167		45		ş	2						-				:	Ξ

The data obtained from Zuñi Pueblo itself was not strictly amenable to the foregoing classification because of its paucity. Buildings had been extended over old refuse heaps and only superposed strata of sherds were found in former open spaces. These were sufficient to indicate conclusively a change in pottery types during the occupation of the pueblo. It seems preferable to tabulate merely the actual number of sherds found, and to classify the decorated wares as of the present-day type, the painted types of the pueblos abandoned in historic times, and the types with glazed decoration. These are indicated in Table II.

Similarly, certain recent ruins in the neighborhood of Zuñi contain painted wares closely related to present-day wares. It seems inadvisable to classify these with the wares from the majority of ruins, but rather to show their comparability with the wares from Zuñi itself. We have accordingly classified them in Table III as in Table II, but as the samples are sufficiently large, percentages are given.

TABLE II.

POTTERY FRAGMENTS FROM ZUÑI.

Location		Corru-	Black	Painted	Wares	Glazed
		gated		Modern	Historic	Wares
North Refuse Heap (V) 1	(6) 5'-5'6"			7		
	(5) 4'-5'		8	7	2	
	(4) 3'-4'		5	3		<i>.</i>
	(3) 2'-3'		15	7	. 1	
	(2) 1'-2'	'	7	5	2	
	(1) 0'-1'		23	11		
Entrance to Rat Plaza (MM)	(8) 7'-8'		5	14	· · · · · · · · · ·	
.,	(7) 6'-7'		10	27	3	
	(6) 5'-6'	1	16	15	1	
	(5) 4'-5'		12	5		
	(4) 3'-4'	i	18	18	2	
	(3) 2'-3'	<i></i>	12	7		
	(2) 1'-2'	[9	4		
	(1) 0'-1'		8	9		
Rat Plaza (LL)	(9) 9'-11'			2		
, ,	(7) 7'-8'		8	21	. 7	3
	(6) 6'-7'		18	22	! 	
i	(5) 5'-6'		17	20	. .	l <i></i>
	(4) 4'-5'	1	7	7		

¹ This letter refers to the location of the excavation as indicated on the plan of Zufii by Kroeber, this volume, p. 202 and Map 6.



TABLE II — (Continued.)

Location		Corru-	Black	Painted	Wares	Glased
		gated	İ	Modern	Historic	Wares
	(3) 3'-4'		2	7		
	(1) 0'-2'	1		8	· · · · · • •	<u> </u>
Muhhewa (K)	(16) 15'-15'6"	· 2	4		4	1
	(15) 14'-15'	27	5		20	3
	(14) 13'-14'	7	6		. 9	2
	(13) 12'-13'	1	·		4	1
	(12) 11'-12'	2	15	5	12	4
	(11) 10'-11'	1	. 8	1	11	1
	(10) 9'-10'	1	13	. 3	5	. 3
	(9) 8'-9'	1	14	8	6	2
	(8) 7'-8'	1	1	11	1	i
	(6) 5'-6'		19	9		l
	(5) 4'-5'		36	29	2	
•	(4) 3'-4'		38	1 17		
•	(2) 1'-2'		21	3		
	(1) 0'-1'	. 1	19	13		i
East of Room 105 (L)	(12) 11'-12'6"		6		· 6	1
	(11) 10'-11'		22		39	6
	(10) 9'-10'	1	45	1	29	6
	(9) 8'-9'		27	1	40	1
	(8) 7'-8'	1	7	3	1	1
	(7) 6'-7'	1	4	4	3	
	(6) 5'-6'	! 1	8	1	3	
	(5) 4'-5'	3	. 2	22	1	
	(4) 3'-4'		2	15		 .
	(3) 2'-3'	l	5	8	' 1	
	(2) 1'-2'	1 1	3	1		
	(1) 0'-1'			7		
South Block (Q)	(8) 7'-8'6"		1	2		 .
	(7) 6'-7'		19	9	11	4
	(6) 5'-6'	i 	24	36	8	10
	(5) 4'-5'	[i	38	37	3	2
	(4) 3'-4'	1	14	12	1	
	(3) 2'-3'	.	28	14		
	(2) 1'-2'	3	4	8		· · · · · · · · · · ·
	(1) 0'-1'	1	13	15		

TABLE III. PERCENTAGE OF POTTERY WARES PRESENT IN RECENT RUINS.

	Site	Corru-	Black	Painted	Wares	Glazed	Size of
	5.1.5	gated	Diaon	Modern	Historic	Wares	Sample
12	K'yatcekwa	1	50		48 1	1	92
32	Hampassawa 2	6	33	26	26	9	204
42	Heccotal'alla	1	69	30			131
52	East Kolliwa	3	55	41	1		115
	West Kolliwa	1	41	52	6		81
53	Wimmayawa	2	66	31	2		197

Historic painted wares of late type.
 This sample may represent a mixture of seventeenth century wares and modern wares. rather than a transitional stage.

SEQUENCE OF POTTERY TYPES.

ZUÑI PUEBLO.

Operations were commenced in Zuñi Pueblo itself; in its refuse heaps, its plazas, and the open spaces left by demolished buildings. In spite of the failure to locate an old refuse heap of any depth, evidences were found of changes in pottery type in superposed strata in the older sections of town. The best indications were found in the deep fill near Muhhewa, situated at the foot of the slope south of the main block. Here a marked difference was found (Table II) in the wares below eight feet as compared with those above. Corrugated ware, painted wares of the type prevalent on the surface of ruins abandoned in the early historic period, and glazed wares are in the lower levels, while modern painted wares are the prevailing type above. Parallel results were obtained at a point east of Room 105, at the foot of the southwestern slope of the main block, and again below the center of the south block, where the wash was demonstrably from the main block on the north. The line of demarkation in the two cases was at the depths four to seven feet and four feet, respectively. The overlapping of the modern painted wares with the earlier types seen here may be significant, but we cannot be certain of this, as we are dealing with washed deposits. Suffice it that these finds demonstrate conclusively that the oldest wares found in Zuñi are identical with those on the surface of ruined pueblos known to have been abandoned in early historic times.

Certain other ruins (Nos. 12, 32, 42, 52, and 53) proved to contain painted wares of a type almost identical with that of modern Zuñi (Table III). While they are referred to by the natives as ancient dwellings, they are, with the exception of No. 32, undoubtedly post-Conquest refuge villages.

HISTORICAL EVIDENCE.

The next step is to follow back the sequence of wares in the ruins of the historic pueblos. In view of the moot points left unsettled by the historic graphers in establishing the identity of the historic pueblos, it seems worth while reviewing the documentary evidence in some detail. We may anticipate our results by stating that the historiographers were essentially correct in their positive identifications and that the identities established in doubt prove to be those with nonhistoric pueblos.

Documentary evidence first throws light on the Zuñi region in the second quarter of the sixteenth century. While it is possible that there was an earlier expedition in 1538 which advanced to the north as far as the Gila or the lower Colorado River, the first report of an expedition penetrating to the Zuñi country is that of Fray Marcos de Nizza in the following year.

There can no longer be any doubt of the identity of the region which Marcos reached. Following Bandelier's closely argued identification of Fray Marcos' probable route 2 we may briefly describe his journey.

Instructed by Viceroy Mendoza to penetrate into the interior in order to observe and to report with particular care on the peoples and the country that he might find, Fray Marcos left San Miguel de Culiacan (Sinaloa) on March 7, 1539 (old style) guided by Estévan, the negro companion of Cabeza de Vaca. Moving northward he followed the coast of the Gulf of California as far as the Rio Yaqui in Sonora. Diverging from the coast his route then lay more directly north through central Sonora. Sending Estévan to precede him in his northerly march, Marcos received from that source his first report of a "very mighty Province" lying thirty days' journey before him. He was told that there were seven great cities in this province, the first of which was called Cibola (Cevola), and that there were also three other "kingdoms" called Marata, Acus, and Totonteac.

Continuing northward Marcos seems to have passed up the Rio Sonora and down the Rio San Pedro to the Gila. Here he met an aged native of Cibola who confirmed the earlier reports, adding,³

that the lord of those seven cities lives and resides in one of them called Ahacus.... He also said to me, that the other Seven 4 Cities are like this one [Ahacus], and some of them larger, and that the principal one of all is Ahacus. He says that toward the southeast there is a kingdom called Marata, in which there used to be many and large settlements, all of which are of houses of stone and many-storied, and that this kingdom was and still is at war with the lord of the Seven Cities, through which warfare the kingdom of Marata has declined greatly, although it still holds its own, and is at war with the others. And he also stated that toward the southeast 5 lies the kingdom called Totonteac.... He also said that there is another very large province and kingdom named Acus. There is also Ahacus, and that word, with aspiration, is the name of one of the Seven Cities, the largest of them all; and Acus, without aspiration, is a province by itself.

Crossing to the Salt River, Marcos entered the "desert" beyond which, so he was informed, Cibola lay fifteen days' journey before him.

¹ Bandelier, (a), 68-105.

² Op. cit., 106-178; Hakluyt, 125-144.

² Bandelier, (a), 145.

Six in Hakluyt, 136.

West in Hakluyt, 136. An error according to Bandelier, (a), 146, footnote.

^{4 &}quot;despoblado," a wilderness or uninhabited country, according to Bandelier.

Meanwhile Estévan, maintaining his lead, had arrived at the "mighty Province," for while still two or three days' journey from his goal Fray Marcos was informed by a returning Indian, one of those who had accompanied Estévan, that the negro-and some of his companions had been killed by the Cibolans. Although this news was confirmed by others who escaped from Cibola, Marcos pushed on.

.... I followed my road till we came in sight of Cibola which lies in a plain on the slope of a round height. Its appearance is very good for a settlement,—the handsomest I have ever seen in these parts. The houses are as the Indians told me, all of stone, with their stories and flat roofs. As far as I could see from a height where I placed myself to observe, the settlement is larger than the city of Mexico.¹

Taking formal possession of Cibola, Totonteac, Acus, and Marata, Fray Marcos turned about and hastened to Mexico with his report.

From this report we learn that at a distance north of Culiacan equivalent to that of Zuñi there were "seven cities" of Cibola, the chief of which was Ahacus. Three other pueblo groups were mentioned: Acus, Totonteac to the west, and Marata southeast of Cibola. Assuming that Cibola is the Zuñi country, Hodge ² successfully demonstrates that Hawwikku was the first discovered pueblo and that in which Estévan was killed, and not Kyakkima, as Bandelier ³ maintains.

With the intention of investigating Marcos's report, Mendoza sent Melchior Diaz to the north. Leaving in November, 1539, he penetrated one hundred leagues north of Culiacan before he was forced by the cold to turn back. Indians whom he encountered gave him a more detailed and less extravagant description of Cibola than that of Marcos. He was told that

there are seven places, being a short day's march from one to another, all of which are together called Cibola....Of the seven settlements, they describe three of them as very large; four not so big....Totonteac is declared to be seven short days from the province of Cibola....They say that there are twelve villages....They also tell me that there is a village which is one day from Cibola, and that the two are at war.

Immediately upon the return of Diaz, Francisco Vazquez Coronado accompanied among others by Fray Marcos and Pedro de Castañeda, chronicler of the expedition, left Culiacan on April 22, 1540. Following much the same route as that of Fray Marcos's earlier journey, they reached Cibola and entered the first pueblo on July 7, 1540. The indications in

¹ Bandeller, (a), 161; Hakluyt, 142.

² Hodge, (a).

^{*} Bandelier, (a), 163-166.

^{&#}x27;Letter from Mendoza to the King, April 17, 1540. in Winship, 547-551. Winship suggests that this village is the "Marata" of Marcos.

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Castañeda's account 1 that Cibola is Zuñi are numerous. Chief among these are the situations of the other "provinces" relative to Cibola which agree closely with those of the known inhabited pueblos — Rio Grande, Hopi, and Acoma — to Zuñi. Acus is identifiable with Acoma, and Totonteac, or Tusayan of Castañeda's account, with the Hopi pueblos. Marata alone remains unidentified.

Describing Cibola, we are told that, "this country is a valley between rocky mountains." ² It comprised seven villages, the largest of which was called Maçaque, ³ and together with Tusayan had as many as three or four thousand men. ⁴ Bandelier has satisfactorily shown that the first village entered by the Spaniards was Hawwikku. ⁵ Jaramillo's statement differs as to the number of villages: —

In this province of Cibola there are five little villages... These villages are about a league or more apart from each other, within a circuit of perhaps 6 leagues....From this village of Cibola [Hawwikku]....we went to another of the same province, which was about a short day's journey off, on the way to Tiheux [Rio Grande] ⁶

But according to the Relación Postrera de Sívola 7 there were,

seven villages in this province of Cibola within a space of 5 leagues; the largest may have about 200 houses and two others about 200, and the others somewhere between 60 or 50 and 30 houses.

Of these Hawwikku had two hundred houses. Their size is given as from one hundred fifty to two hundred and three hundred houses in the Relación del Suceso.⁸

The next documentary evidence relating to the occupation of the Zuñi pueblos is contained in the reports on Chamuscado's expedition of 1581. Moving up the Rio Grande to Bernalillo, he penetrated to the west to the Zuñi Valley. At Cami he found six pueblos of thirty, forty, and even one hundred houses. Two years later Espejo found a province called Zuñi (or in a variant report, Amí), "and by another name Cibola," comprising

¹ Winship. The question of identity of Cibola has been discussed for half a century: among the contributors have been Gallatin, Squier, Whipple, Turner, Kern, Emory, Abert. Morgan, Simpson, Dellenbaugh, Bandelier, Hodge, and Winship.

² Winship, 518.

Op. cit., 517, 524.

Op. cit., 519. Compare Hodge, (b), 351, footnote.

Bandelier, (c), 29.

Winship, 586 et seq.

⁷ Op. cit., 569.

² Winship, 573. Compare the statements of Mota-Padilla and Gomara in Bandelier, (c), 38.

Bandelier, (c), 62.

¹⁸ Bolton, 148. Cami or Sumi is identified with Zufii in Testimonio de la entrada que hiso Anton de Espezo, Bandelier, (c), 63.

six pueblos, one of which was Aquico. Luxán gives the names of the aty pueblos visited by the party as Malaque, Cuaquema, Agrisco, Olay Cuaquina, and Cana. Espejo, whose estimates are usually exaggerate put their population at more than twenty thousand.

The testimony of the several reports of the Oñate expeditions is important for our survey and must be given in full. Marching westward from his settlement on the Rio Grande in 1598, Oñate

rested one day [at Acoma], and on the next we set out for the province of Zuñi, going to the head of the river which is called De la Mala Nueva, next day four leagues, camping for the night in a forest, without water; next day to the Agua de la Peña, four leagues... Next day four leagues to a spring which flows to the province of Cuni. We saw three ruined pueblos. The following day, which was the feast of All Saints, three leagues to the first pueblo of the people belonging to the province of Zuñi, which consists of six pueblos... Remaining here one day, on Tuesday we went three leagues to visit the last pueblo, which they call Cibola, or by another name. Granada, where Francisco Vazquez Coronado nearly sixty years ago had the encounter with the Indians.

Through Oñate we learn the names of the Zuñi pueblos for the first time. In the act of allegiance, executed at Aguicobi, the six pueblos are called, "Aguicobi, Canabi, Coaqueria, Halonagu, Macaqui, Aquinsa." The report of Oñate's second western expedition of 1604–5 yields some further information.

After having travelled towards the west sixty leagues, they arrived at the province of Cuñi, which is in some plains more inhabited by hares and rabbits than by Indians. There are six pueblos; in all of them there are no more than three hundred terraced houses of many stories, like those of New Mexico [the Rio Grande country]. The largest pueblo and head of all is the pueblo of Cibola, which in their language is called Havico. It has one hundred and ten houses."

We are now in a position to sum up these early references to the Zuñi and their pueblos brought together by the labor of Bandelier, Winship, Hodge, and Bolton.

¹ Bolton, 184, footnote.

² Bandelier, (c), 64-74; Bolton, 184.

² Bolton, 235; cf. Bandelier, (c), 81. We would suggest that Ofiate's route was the same in 1604–5 when he passed Inscription Rock: eight leagues (about twenty-one miles) down the main Zuñi Valley from the forested Zuñi Mountains would bring him to the Pescado Springs, which flow to Zuñi.

^{&#}x27;''Obedience y Vasaliaje & su Magestad por los Indios de la Provincia de Aguscobi'', Nov. 9, 1598.

⁵ According to Bandelier, (c), 84.

⁶ The name "Coaqueria" does not appear in the Spanish text given by Bandelier, (c), 84, footnote, but is given by Bancroft, in Twitchell, (a), I, 323, footnote.

⁷ There is an incidental reference to "the pueblo of Cibola, which the natives call Cuni," Bolton, 239.

Bolton, 268.

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There are first the references of the legendary type to the "seven cities" and "seven caves" to the north of Mexico. Bandelier has demonstrated that these are probably entirely mythical in character, but even if they had a foundation in fact, there is nothing to show that they refer specifically to the Zuñi pueblos.

Second, there is the hearsay evidence of Fray Marcos de Nizza and Melchior Diaz. Marcos was told that to the north there were seven cities called collectively Cibola; that the first was called Cibola and the principal one Ahacus. Marcos saw this first city from a distance and from his description Hodge has plausibly identified its position with that of Hawwikku. Diaz, who received a seemingly faithful description, was told that Cibola comprised seven settlements.

Third, there is the testimony of the explorers of the Zuñi country, some of whom, however, evidently had only a superficial knowledge of Zuñi conditions. The number of villages reported in the documents of the Coronado expedition of 1540 varies: Castañeda and the Relación Postrera de Sívola report seven, Jaramillo but five. The most southwesterly village is again called Cibola and another Maçaque. In 1581 Chamuscado reports their number as six. Espejo reports six in 1583 called Malaque, Cuaquema, Agrisco, Oloná, Cuaquina, and Cana. Aquico is again mentioned as one of them. Oñate puts their number at six in 1598, enumerating in his official list, Aguicobi (or Aguscobi), Canabi, Coaqueria, Halonagu, Macaqui, and Aquinsa. Of these the most southwesterly is called Cibola and Havico, and midway between this pueblo and Pescado Springs lies the most northeastern village. Of all these Oñate's list has probably the greatest evidential value.

This seems a convenient point to inquire into the identity of the pueblos occupied during the sixteenth century.

There does not seem to be any certain evidence that the Zuñi villages numbered seven in 1540 and that one was abandoned before 1581–98.² Even the most ambitious attempts to identify the pueblos do not indicate the seventh with any degree of certainty. However, the names of seven pueblos are given by two accounts of the latter period, each of which puts the number at six: Aquicobi (Ahacus, Aquico, Agrisco, Aguscobi, Havico), Canabi (Cana), Coaqueria (Cuaquema), Halonagu (Oloná), Macaqui (Maçaque, Malaque), Aquinsa, and Cuaquina. These have been identified by Bandelier ³ and Hodge ⁴ as follows: Aquicobi with Hawwikku, Canabi

¹ Bandelier, (a), 3-23.

² Cf. Hodge, (c), 1017; Bandelier, (c), 84.

³ Bandelier, (c), 84; (b), 337-339.

⁴ Hodge (a), 149; (c), 1017; in Stevenson, 284.

with Kettcippawa,¹ Coaqueria with Kyakkima,² Halonagu with Hallonawa, Macaqui with Mattsakya, and Aquinsa with Pinnawa.³ Cuaquina remains unidentified. The recognizable orthography of the early records and the indicated positions of the pueblos makes the identifications of some of them fairly simple. Thus the most southwesterly village of Oñate is Hawwikku, and that midway between this point and Pescado Springs is evidently Mattsakya. These attempts at identification have, of course, not been based on archaeological evidence.

It is possible to appeal directly to our archaeological data for confirmation of these suggested identifications. The question to put to ourselves is simply "Is the same type of pottery found on the surface of all of these ruins?" Referring to the data given in Table I for Kettcippawa, Kyakkima, and Mattsakya (Nos. 13, 45, and 48) we find the following percentages:—

	Corrugated	Black	White	Red	Buff
Kettcippawa	0	43	9	16	32
Kyakkima	6	46	17	16	15
Mattsakya	3	56	12	7	22
			•		r

to which may be added data for

Hawwikku 4	0.5	49	10	16	24

These ruins constitute a group representing wares of the same type and proportions. On the other hand both Pinnawa and Hallonawa (Nos. 33 and 39) present striking differences from this group and from each other:—

Pinnawa ⁵	11	50	16	19	6
Hallonaw 6	60	0	15	25	· 0

¹ Hodge, (a), 148 as T'kanawe = Kyanakwe ("water-place"), the general name for the Ojo Caliente region. Bandelier, (b), 338–339, confuses the names Chyan-a-hue and Ketchipa-uan referring to the same ruin.

¹ There are references to the "Peñol de Caquima," evidently meaning Towwayalianna at the foot of which rests Kyakkima, Bandelier, (b), 335, footnote.

³ "A-pinaua (three miles southwest of Zufil and in ruins)," Bandelier, (c), 84; (b), 338, footnote; Hodge, (a), 149, is doubtful of this identification; Cushing, (b), 155, footnote, gives Kwa-ki-na and Pinnawa.

⁴ Percentages for corrugated and black based on actual count, the others suggested by another sample from which these two wares had been removed. Both samples collected by Dr. Kroeber.

Average of three upper layers.

Probable percentages suggested by imperfect collections; certainly neither black nor buffware is present at this ruin.

Quite as marked as these differences are those in the character of the wares. The first group is homogeneous; the wares from Pinnawa are identical with those at the bottom of the Mattsakya refuse heap and bear a more remote resemblance to the wares from its surface: while sherds from Hallonawa would never be confused with any of the others. The situation in its simplest terms is just this. We have here three different groups of data, only one of which can refer to the date under consideration if we are to hold to our fundamental assumption that at any time there was only one definite pottery art, not a random display of heterogeneous stylistic preferences. No matter which one of these groups of data we may select, the other two cannot possibly refer to the same point of time. No matter which we may select, the suggested identification of the pueblos enumerated by the early explorers will not be corroborated. We are thus left with two alternatives: either the identifications or the lists of pueblos are incorrect.

On the basis of the types of pottery present we must concur in the identification of Hawwikku, Kettcippawa, Kyakkima, and Mattsakya as pueblos inhabited at the close of the sixteenth century. But on the same grounds, we cannot concede that either Pinnawa or Hallonawa were occupied at that time. Several explanations of the doubtful identifications of these pueblos present themselves.

Dr. Kroeber suggests that the "Aquinsa" of Oñate's list is the native name "Akinnsa" or "Appkinnsa" (awa, rocks + kinnsa, black) for Black Rock or Rocks, as it is variously styled. Black Rock, where the agency now stands four miles up the valley from Zuñi, is a long cliff of black igneous rock caused by a geologic faulting at this point. This is particularly suggestive, for when we turn to Oñate's list, where the name "Aquinsa" occurs, we find that the names of the villages are given in order up the river from Hawwikku 1— an order exactly that of the identified ruins, Hawwikku, Kettcippawa, Kyakkima, Hallonawa (we will return to this later), Mattsakya, and then Aquinsa is added. If Pinnawa is meant by Aquinsa, then after giving the pueblos consecutively up the valley, the enumerator abruptly broke the order and returned down the valley four miles from the last pueblo mentioned, Mattsakya, to add Pinnawa as an afterthought. If it had been intended to include Pinnawa, then its name would have appeared in the ordered list before Hallonawa and Mattsakya.

We endeavored to follow up this identification of Aquinsa with Black Rock, but without success. A search of the vicinity revealed a number of hitherto unreported sites but nothing that would correspond to the Aquinsa of Spanish times. However, the site is a favorable one and the ruins of such

¹ The list was prepared at Hawwikku according to Bandelier, (c), 84.

a pueblo, probably a small one, may yet be found below the cliffs, on them or in the broad valley above, now nearly obliterated by the reservoir.¹ We would suggest somewhat doubtedly that by Aquinsa a settlement in the vicinity of the Pescado Springs may have been meant. They lie thirteen miles up the valley where another cliff of igneous rock is exposed, which is, however, not nearly so prominent as the agency site. This place might well deserve the name "Black Rocks." But it is extremely doubtful that a sixteenth century site will be found, since Oñate saw no settlement there.²

The name "Halonagu" occurring in the lists presents a different problem. It is evidently to be identified with the name "Hallonawa," as other writers have indicated. The difficulty which has arisen in connection with identifying the pueblo of this name seems to be due to a confusion in its application. We would suggest that the name Hallonawa in the sixteenth century records was not applied to the ancient pueblo Hallonawa, but tothe pueblo Zuñi itself.3 The ruins of Hallonawa lie immediately across the Zuñi River from Zuñi pueblo and are now almost completely obliterated by the extensions of the modern village and traders' stores. But the name Hallonawa is a general name for the locality. Zuñi 4 itself is commonly called "Hallonawa" by a Zuñi away from home. The same seems to have been true ever since the present pueblo was founded. There was evidently a settlement of that name when the church and mission of "La Purificacion de la Virgen de Alona" were established about 1629 5 and destroyed in 1680.6 On their descent from the refuge village on Towwayallanna after the Pueblo Rebellion the Zuñi are commonly believed to have concentrated at the site of their present pueblo, which appears under the name of "La Purisima de Zuñi" when visited by Pedro Rodriguez Cubero in 1699.7 From this time

¹ Simpson, (a), 117, saw to the north of the present dam "some old but comparatively recent buildings and corral enclosures," built of lava. "The circuit of the pueblo, in plan, is about five hundred by one hundred feet." There are occupied small houses there now, but we noticed no large pueblo. Whipple, I, 66, saw gardens in the vicinity. The site would bear reëxamination.

² See above, p. 270.

³ We do not mean that ancient Hallonawa was built on both sides of the river, for we found no certain signs of it under the houses of modern Zufii. Cf. Hodge, (c), 527, 1017; Bandelier, (b), 337; Mindeleff, 88.

⁴ The name Zufii would appear to have had local application only in recent times, probably since the advent of the Spaniards. Hodge, (c), 1016 suggests that it is a Spanish adaptation of the Keresan Sünyitsi or Sŭ'nyitsa.

[•] Hodge, in Stevenson, 284.

[•] Hodge, in Stevenson, 285. The early records relating to the establishment of the church are not available to the present writer, but none of the secondary sources that we have consulted refer to two churches, one in Hallonawa, the other in Zuñi, with the exception of Hodge's doubtful reference to the church "which formerly existed at Halona," in Stevenson, 284. So far as we are aware no church ruins were found in the excavations at Hallonawa, nor are there any superficial signs of such a structure.

⁷ Hodge, in Stevenson, 285.

on the documentary notes all evidently refer to the present pueblo Zuñi, yet in 1707 Fray Francisco de Irazábal was missionary at "Alona," in 1715 Governor Mogollon sent twenty-five men to "Alona" to protect the Zuñi against the Apache,² and in 1716 natives were sent from Zuñi, still called Alona, to the Hopi.³

The documentary evidence is then that before the Pueblo Rebellion of 1680–92 there was a settlement known as "Hallonawa" where the pueblo now stands on the north bank of the river. The oldest pottery types found beneath modern Zuñi are those found in the upper layers of the ash heaps at Mattsakya, Kyakkima and Ketteippawa and on the surface at Hawwikku, and therefore referable to the sixteenth or seventeenth centuries, or perhaps somewhat earlier. The evidence of the pottery types from Hallonawa indicates that the ruin south of the river antedates the foundation of the present pueblo by a considerable period.

This attempt at the identification of the documentary name "Halonagu" has led us then to fix the foundation of Zuñi pueblo. So far as the excavations in the modern village show, the pre-Rebellion settlement was probably quite small and occupied only the summit of the little knoll now entirely covered by houses.⁶

We have then identified six of the seven pueblo names given in the sixteenth century records. The explorers from Chamuscado on agree that the pueblos numbered only six although the seventh name "Cuaquina," is given by Luxán as that of an occupied village. We have failed to identify such a pueblo.

We cannot proceed with the subject of the sequence of pottery types, until the exact historical provenience of these ruins is established. Thus far we have found that Hawwikku, Kettcippawa, Kyakkima, and Mattsakya, and possibly Zuñi-Hallonawa were occupied in the sixteenth century, but we must inquire as to the date at which they were abandoned.

Hawwikku was occupied in 1629 when the mission of "La Concepcion de Hawikuh" was established. The Zuñi murdered their priest at this village, in 1632 and fled to Towwayallanna, where they remained about three years, the resettlement of their villages beginning in 1635.8 The

¹ Hodge, in Stevenson, 286.

² Twitchell, (b), II, 178.

³ Hodge, in Stevenson, 286.

⁴ The alternative to the identification of Zuñi with "Halonagu" is that somewhere in the vicinity of Zuñi, say within half a mile, a ruin of the sixteenth century with church ruins will be found. This is extremely doubtful.

See above, Table II.

⁶ See this volume, p. 189 et seq and p. 228.

^{7 &}quot;Cuaquina" may be Kwakina, a ruin said to lie on the northern side of the valley some miles west of Zufii. Unfortunately, we did not visit this ruin.

[•] Hodge, in Stevenson, 284, 285.

mission was destroyed by raiding Apache (or Navajo) and abandoned in 1670 (1672?), but the pueblo was still inhabited at the time of the Rebellion in 1680.² At that time the Zuñi again abandoned their villages fleeing to Towwayallana: Hawwikku does not appear to have ever been reoccupied.³

Kettcippawa contains the ruins of a church, indicating that the pueblo was inhabited after 1629, but its name is not mentioned in 1680 or later. It must have been abandoned between these dates.⁴

Kyakkima and Mattsakya were both inhabited at the time of the Rebellion, 1680; the latter being one of the two "aldeas de visita" of the mission of Alona.⁵ Both were evidently abandoned in favor of Zuñi-Hallonawa when the natives descended from their refuge on Towwayallanna in 1692.

No mention is made of Aquinsa after 1598, and if such a village existed at that time it must have been abandoned before 1680 when only Hawwikku, Kyakkima, Mattsakya, and Zuñi-Hallonawa were inhabited.

Mention had been made of the use of the refuge village on Towwayallanna, the mesa that dominates the central part of the Zuñi Valley. On July 19, 1540, Coronado went "4 leagues from this city [Hawwikku] to see a rock where they told him that the Indians of the province had fortified themselves", evidently to Towwayallanna. In 1632 the Zuñi fled to their refuge village, where they remained about three years.

They occupied the mesa top again during the Pueblo Rebellion from 1680 for more than twelve years, for they were found there by Diego de Vargas in 1692. Again in 1703 they reoccupied the mesa temporarily, returning to Zuñi-Hallonawa in 1705.8

It would therefore appear that all the pueblos of the sixteenth century, except Zuñi-Hallonawa, were abandoned during the next century. The slight difference in time of abandonment seems to have left no appreciable mark on the wares found surficially at the several ruins. The slight differences we found (p. 272) are evidently not significant.

¹ Bandelier, (b), 338, footnote; Hodge, (a), 144; (b), 300, footnote; in Stevenson, 285.

² Cf. Bandelier, (a), 174.

Hodge, in Stevenson, 285.After 1636, Bandelier, (b), 338, footnote.

Bandelier, (b), 337, footnote.

Winship, 565; Bandeller, (b), 335. This passage does not necessarily imply that Towwayallanna was used as a refuge prior to 1540: the warlike preparations for Coronado's coming may have been the first of the kind. We found nothing in the samples of the sherds obtained on the mesa to indicate its use in pre-Spanish times.

⁷ Hodge, in Stevenson, 284; cf. Bandelier, (b), 335, footnote.

⁶ Hodge, in Stevenson, 285; Bandelier, (b), 335.

HISTORIC AND LATE SITES.

Excavations for a pottery sequence were made in the ash heaps of all the historic pueblos except Hawwikku. The net result of this so far as Kettcippawa and Kyakkima (Nos. 13 and 45) were concerned was to establish the fact that their refuse deposits were very thin; so thin, in fact, as to preclude stratigraphic work. No differences were found between the wares from the top and the bottom of these shallow deposits. The significant fact is that these two pueblos were evidently occupied for a relatively short period.

On the other hand deep and extensive ash heaps were found at Matt-sakya (No. 48). While probably no larger than the other two pueblos, this site had been occupied for a considerable period. Certain well-defined changes were at once noted in the types present. These were differences in proportions in wares present at top and bottom: an increase in percentage of corrugated ware and a decrease in that of buff were found on working downward, while the percentages of black, white, and red remained stationary. Equally significant stylistic changes occurred in white, red, and buff wares.

Excavation at Pinnawa (No. 33) uncovered the deepest refuse heap found by us in the Zuñi region. Nevertheless the pueblo must have been rather small. Coupled with these characteristics are the marked fluctuation in proportions and types of wares observed in the refuse heap; all indicative of a prolonged occupancy. The differences in proportions are an increase in percentage of redware, but decreases in black and buff. Changes in style are more marked than in the case of Mattsakya. The significant point is that the wares from the upper levels at Pinnawa are indistinguishable from those from the lower levels at Mattsakya. There can be no doubt whatever that the occupation of the latter site, despite slight differences in proportions of the identical wares, was practically continuous with that of the former.

Site 8, near Hawwikku, more closely resembles the historic sites in types present than it does Pinnawa. We have concluded this in Table IV in which these historic and late sites are ranked.

These relations are partly obscured by the manifold classification in this table. To make the point emphatic it will be found convenient to group these types according to some major classification, either by technique or by body color. The latter is preferable for our purpose, inasmuch as half the sherds are black ware and the percentages of the remaining technical types would still be so small that they would be obscured by their variations.



LATE AND HISTORIC SITES.

13 East slope South slope 48 Surface 11	_						Ware	Ware	Ware	Ware		and Painted Ware	ainted		Sample
			White	Red	Buff	White	Red	Buff	White	Red	Buff	White	Red	Buff	
		43	2	က	61	- - -		10	4	6	1		4	21	259
	7	4	12	က	7	-	-		4	7	:		6		73
	9	94	2	က	15	-	:		ıç	10	:	3	œ	:	327
11	ຕ	29	6	က	13	_	-	-	ଚୀ	1	o o	:	91	-	505
		54	18	:	19	-			9	-	-	-			84
67	63	48	13	-	14	- :	-	e.i	-	-	9	4	-	:	174
က		47	7	1	13	C)		ıc _	9	4	4	2	:	_:	506
4	<u>ო</u>	53	7	8	14	9	:	rc _	4	61	:	က	:	_:	221
2	 73	94	9	-	21	_	:	_	5	-	_	6	ÇI	-	237
9	4	53	2	က	10	7	_	4	ıĊ	2	63	-	-	:	285
2	∞	49	~	•	15	9		က	'n	Çì	_	4	_:		283
∞	12	49	۲-	က	00	က		က	₹	87	က	'n	_		187
6	7	51	က	:	9	ċι		က	6	က	2	01	2	8	127
Surface		19	10	9	- ∝	4	:			-	.:	:	2	_: _:	204
S. F.	13	21	17	4	17	-	:	:	4	4	:	7	18	_ :	48
S. W.	15	41	2	2	12	7			:::::::::::::::::::::::::::::::::::::::	11	:	•	:	:	27
33 1	ο ς:	28	4	9	11	:	9		_	9.		-		:	7
27	01	20	∞	9	ū	C1		:	4	7	_:	61	9	: : :	192
က	12	48	6	4	2	:	က		ന	5	_ :	7	7		338
4	16	46	2	C1	9		œ		4	4	:	4	:	:	226
5	11	\$	4	-	-	4	က	:	ຕ	က	:	2	14	:	245
9	14	35	∞	9	4	က	10		-	CI	:	2	10	_:	191
2	13	42	91	S	2	4	11	:	_	က		:	9	:	305
90	15	34	Ξ	9	က	9	10	:	21	က	:	က	7	:	549
o	12	30	7	7	7	9	9		4	8	:::::::::::::::::::::::::::::::::::::::	က	16	:	610
10	12	8	9	7	01	9	9			4	:	<u>ب</u>	13	<u>:</u>	344
11	6	æ	9	œ	9	63	4	:	က	œ		က	16	: :	179
12	19	32	m	က	81	က	6	:	rc.	ဗ		es	12	:	237
13	12	21	6	17	-	:	16	:	4	2		က	9	<u>:</u>	121

1 This series gives the weighted averages from both sections at Mattaskys, except that No. 9 is from the first section only,

These series, have, therefore, been classified by body or ground color in Table V where the point comes out clearly. We may summarize the changes in proportions by the following averages for the three upper and lower levels at Mattsakya and Pinnawa:—

		Corrugated	Black	White	Red	Buff
Mattsakya	Upper	3	49	23	4	22
•	Lower	9	50	22	4	16
Pinnawa	Upper	11	50	16	19	6
	Lower	14	33	14	37	2

TABLE V.

LATE AND HISTORIC SITES BY GROUND COLORS.

	Site	Corrugated	Black	White	Red	Buff	Size of Sample
13			43	9	16	32	259
4 5	East slope	7	44	16	19	14	73
	South slope	6	46 .	17	16	15	327
48	Surface	3	56	12	7	22	502
	1 .	1	54	24	1	20	84
	2	2	48	24	4	22	174
	3	4	47	22	5	22	206
	4	. 3	53	20	5	19	221
	5	5	46	21	4	24	237
	6	4	53	20	7	16	285
	7	8	49	22	2	19	283
	8	12	49	19	6	14	187
	9	7	51	24	5	13	127
8	Surface	7	61	15	9	8	204
	S. E.	13	21	23	26	‡ ₁₇	48
	S. W.	15	41	14	18	12	27
33	1	8	58	5	18	11	71
	2	10	50	16	19	5	192
	3	12	48	16	19	5	338
	4	16	49	15	14	6	226
	5	11	40	21	21	7	245
	6	14	35	19	28	4	191
	7	13	42	15	25	5	302
	8	15	34	22	26	3	549
	9	12	30	20	31	7	610
	10	12	30	18	30	10	344
	11	9	35	14	36	6	179
_	12	19	35	14	30	2	237
	13	12	21	16	50	1	121

SEQUENCES BY SERIATION.

Thus far the stratigraphic method has been simple and productive of unequivocal results, but beyond this point it fails us. There are no other ruins in the Zuñi region with pottery similar to that of Pinnawa, nor any which by type or proportions would appear to have immediately preceded it in point of time. Nevertheless, it has long been recognized that pottery from the Zuñi region, or more generally, from the Little Colorado, presents a community of characteristics which have served to emphasize the essential unity of the wares.² This fact is borne in on us again by the result of the present inquiry, and indeed, one has only to observe the unity of style in the wares from Hecota'utlla and Hallonawa published by Dr. Fewkes accidentally mixed pottery from the two ruins — or to compare them with wares figured in the present report to reach the same conclusion. Possibly we must except the pottery from "black-and-white" ruins from this general statement, for their specifically Zuñian characters are by no means marked. It is true that the red pottery painted in black which characterizes some of the earlier sites bears little more than a generic resemblance to the wares of the Hecota'utlla-Hallonawa type — those we think of as characteristic of the Zuñi region; yet, that pottery occurs with the latter wares in other ruins and occurs with them again at Pinnawa, Mattsakya, and other historic ruins.

We have then in the Zuñi region a large number of ruins, all presenting much the same general style of pottery, but with differences of technique and color scheme from ruin to ruin. It seems reasonable to believe that we are dealing with no other phenomenon than the several phases of a single pottery art. The essential need is therefore a principle for the seriation of the data, to be subjected to the method of proof by concurrent variations.

The sequence which we have already reviewed for the historic and late sites suggests such a principle. We have found among the other indicated changes that corrugated ware increases steadily in its proportions from complete absence in modern Zuñi to fourteen percent of the whole in the lowest levels of the Pinnawa ash heap. It seems possible then to utilize the fluctuations in this type for a first grouping, a preliminary seriation of the data from superficial samples. It will be recalled that Dr. Kroeber found the variations in this ware particularly suggestive.³ It might prove



¹ Naturally such sites must exist elsewhere, but we will return to this point later.

² Thus, for example, Dr. Kidder (a, 453) is able to speak of the close affinities of old Zufii wares with those of the Little Colorado and their less involved relations with those of the Pajarito Plateau. Similarly, Mr. Nelson was able, at the close of his reconnaissance trip of 1916, to define the somewhat restricted area of specifically Zufiian wares for the writer.

³ This volume, page 14.

fertile then to arrange these data according to their percentages of corrugated ware in sequence from lowest to highest. But we find on referring to the data given in Table I that the samples fall into two groups. each group corrugated ware is present in proportions varying from complete, or almost complete absence up to more than half of the whole. But any two corresponding samples from the two groups, with identical percentages of corrugated ware, have radically different wares associated with them. In one group the associated wares are black, white, red, and buff occurring in several combinations. In the other group the sole associated type is whiteware of the "black-and-white" variety. For example, of two samples with 48 percent corrugated, Ruin No. 58 has as associated wares 32 percent of redware and 20 percent of whiteware, while Ruin No. 38 yields only 52 percent of whiteware. But there can be no doubt with regard to the affinities of the two groups. The first presents wares with a style of treatment specifically Zuñian in character, bearing a marked resemblance to those in the series from the historic and late series, while we have already expressed our uncertainty as to the affiliations of the wares of the second group. It seems best for the present to consider the first group only.

The first group can be subdivided into two groups, in one of which there is no glazed decoration, the other contains glaze-decorated ware. The percentages of corrugated ware in the first subdivision average higher than those in the second. Further, the criterion of glaze would include the historic and late sites in the second subgroup. This would suggest that we are dealing here with a sequence of painted wares followed by glazed wares: a suggestion worth putting to the test by the method of concurrent variations. It will be convenient to handle each of these subgroups separately.

PAINTED WARE SERIES.

The first subgroup contains thirty-five samples from as many ruins. The wares are corrugated, black-on-white, black-on-red, and black and white-on-red. These samples may be arbitrarily ranked according to their percentages of corrugated ware from highest to lowest. The test of such a seriation as an historical series will lie in the observed seriation of the accompanying wares; for, when a group of three or more distinct, but mutually dependent, values are ranked according to some postulated sequence for one, and the other values are found to present serially concurrent variations, it may be concluded that the result is not fortuitous.

Ranking the samples in descending order according to their percentages of corrugated ware, we find general changes in both accompanying wares: an increase in percentage of redware and a decrease in that of whiteware.

The changes are not marked, however, as they are obscured by variations in these wares.

We have found that another seriation based on the percentages of redware yields a clearer result. That this should be so is obvious, because the percentages of redware are small as compared with those of white and corrugated ware, and by ranking redware percentages in a smooth sequence all variations will appear in relatively small magnitudes in the white and corrugated series. The seriation was suggested by the fact that redware is the predominating type in the second subgroup but does not appear at all in the group of "black-and-white" wares. It seemed reasonable to suppose, therefore, that redware had its beginnings in the subgroup with which we are dealing and rose in intensity of use therein.

On this assumption we have ranked the samples according to ascending percentage of redware (Table VI). The results are striking: there is a slight, but certain, decrease in corrugated ware and a marked decrease in whiteware. More particularly, there is rigid segregation of the values for the two wares: few values for corrugated less than 40 percent are found; while equally few values of white lie above the same point. The distribution of the wares may be indicated by curves of the type:—

for corrugated ware: -

$$y' = 49.3-0.26 x$$

and for whiteware: -

$$y'' = 36.7 - 0.74 x$$

where y' and y" are percentages of corrugated and whiteware respectively for the deviation x from the midpoint of the redware series, 14 percent. In these equations -0.26 and -0.74 express the direction of the slope of the curves and their obliquity. Testing these curves for closeness of fit, we find that the deviations of the observed values from the theoretical values computed from these formulae are as often positive as negative; that is, that the variations appear to be accidental and that the curves represent the distributions fairly well.

Another point brought out by this seriation is of equal importance. We have included in the redware in this subgroup sherds bearing decorations in white as well as black, i. e., three-color painted ware. We find that this ware appears only in samples containing 14 percent or more of redware, that is, in the second half of the series. We pointed out above that there was every reason to assume that this subgroup of painted wares preceded that of glazed wares. Now we find that the second half of this subgroup coincides in its three-color redware with the characteristic style, three-color decoration, of the glaze subgroup. This must be considered as corroboratory of the historical reality of our assumed sequence.

TABLE VI.

PAINTED WARE SERIES ACCORDING TO ASCENDING PERCENTAGE OF REDWARE.

Site	ļ	Painted Wares		Corrugated	Size of Sample
	. 1	Red	White	_	
	Two Color and Three Color	Three Color			
6	1-		55	45	131
23	2		64	34	117
21	2		74	24	167
165	2		56	42 .	146
24	2		50	48	230
17	3		62	35	109
18	5		45	50	153
58	6		29	65	105
60	7		48	45	118
19	8		36	56	184
40	8		38	54	79
29	9	1	29	62	56
167	10	ļ	48	42	101
76	10	[37	53	44
164	10	[28	62	161
5	12		43	45 .	118
26	13		43	44	61
1	13	i	35	52	59
28	14	1	33	53	110
95	15	3	25	60	116
56	16		28	56	29
74	16	4	23	61	68
36	18	2	17	65	200
27	18	1	38	44	133
80	18	3	39	43	104
62	19	7	27	54	164
37	20	2	30	50	247
38	20	-	35	45	134
4	22	2	25	53	335
92	22	2	35	43	. 93
46	24	~	41	35	298
163	25		39	36	38
96	30	4	20	50	136
90 86	32	10	20	48	117
90	39	3	20 23	38	117
90	อช) ·	20	30	112

GLAZED WARE SERIES.

The second subgroup is characterized by the presence of decoration in glaze. In this group would be included the familiar wares of Hecota'utlla and Hallonawa figured by Fewkes. The group includes corrugated ware, painted wares of the types black-on-white, black-on-red, brown-on-buff, and black and white-on-red; glazed wares of the types black-on-white and black-on-red; and combination painted and glazed wares of the black and white-on-red type. Glazed and painted wares of all types form a homogeneous group from a stylistic viewpoint. Glazed wares may be conceived as those in which a line of glaze has been substituted in the decoration for a line of paint.

We have surface samples from only eight ruins in this subgroup. These have been ranked in the first section of Table VII in descending order of percentages of corrugated ware according to our assumption. To bring out the distribution of values more clearly these have been grouped by body color in Table VIII. The concomitant variations in the white and redwares are clear: whiteware increases slightly, while redware has a more decided increase. The distributions of these values take the form of curves of the type:—

for whiteware: -

$$y' = 23.9-0.24 x$$

and for redware:

$$y'' = 33.3-0.76 x$$

where y' and y" are percentages of white and redware respectively for the deviation x from the midpoint of the corrugated series, 42.9 percent. Here, the values -0.24 and -0.76 express the degree and direction of slope of the two curves. By the usual test for fit, we find that observed values do not differ greatly from the theoretical and are alternately positive and negative. While definite results are obtained from this seriation, it must be remembered that they are based on a small number of cases, only eight. We would therefore consider these results as indicative but not certain.

In Tables VII and VIII we have also given the data for a number of sections made with one exception in ruins east of the Zuñi Reservation. All clearly belong to this subgroup, but their sequential relations are not clear. For convenience, these tabulations have been placed in an order similar to that for the series of surface samples. This was suggested in part by progressive stylistic changes observed in them. It is hopeless to try to find a confirmation of the series for surface samples, because the

samples from the sections are small and the percentages fluctuate widely. All are evidently closely related from the sequential standpoint, yet we cannot combine them since we do not know where to begin to equate values from the several series.

It will be noted that buffware enters into only one sample in the series; at Ruin No. 146 (Gigantes) where 1 percent occurs.

The point might be advanced that we have failed to link up this group with that of the historic and late ruins. That is true. However two points must be kept in mind in considering this objection: first, we have given only the data available for statistical treatment, and second, we are considering here only the arbitrarily selected area defined above as the Zuñi region. We must reserve the discussion of this point until we consider the extra-regional affinities of the wares.

TABLE VII.

GLAZED WARE SERIES ACCORDING TO DESCENDING PERCENTAGE OF CORRUGATED WARE.

Size of Sample Buff Three Color Glazed and Painted Ware Red White Buff Two Color Glazed ጀ White Buff Three Color Painted Red 51 15 20 20 16 White Fuf Two Color Painted Red White 22852848 17 8 8 8 8 18 18 14 Corru-gated 5 23 23 23 28 28 28 28 28 28 Site 25283212 104

TABLE VII — (Continued).

Site	Corru- gated	Two	Two Color Painted Ware	inted	Three	Three Color Painted Ware	ainted	Two	Two Color Glazed Ware	azed	Thre	Three Color Glazed and Painted Ware	lazed Ware	Size of Sample
		White	Red	Buff	White	Red	Buff	White	Red	Buff	White	Red	Buff	
104 6	55	24	13			5			3					88
π	4	16	8	:	- :	14			:			6	:	8
4	æ	13	16	:	:	12	:		က	:		9	- - -	32
က	49	10	17	:	-	10	-	:	2	:				41
7	જ	14	23			9	: : :		•	:		87	-	49
1	8	_	20	:	:	10				:		က		9 8
140a 6	\$		6			18			9					=
'n	84	6	43	- - -						:				21
4	47	က	35	:	:	15	-	:		•			:	34
က	67	6	18	-		က	:		က	:			: ::	
87	4	83	23	:	- :	7	:	:	9	:	:	83	:	48
-	20	16	24	:		œ		:	83	:	:		: :	62
140b 14	88	ន	88			14			5					27
13	49	13	5 6			12		:		:	:			67
12	88	14	13	:		4	- :		:	•:	:	-		167
==	8	8	24	- -		4	:	9	က	:	:	က	:	33
01	8	17	35	:	:	12			က	:	:	က	:	41
6	88	17	£	:						:	:	7		15
œ	13	8	29	:		12		:	9		:	9	:	17
7	24	83	35	_: _:	:		:		12	:	:	:	:	17
9	28	17	15	:	:	15	-	9	6	: :	:	12	:	34
ĸ	83	9	83	:		18	: :	:	12	:	:	9		17
7	2	ν.	11						7			-	_	90

0 1 20 100	12 28 38 81 81	51 57 50 50	88 88 89 89 89 89 89 89 89 89 89 89 89 8	74 50 102 13
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8 2 4	25 21 18 13 30	23 9 9 19 16	11 4 7 8 4 8 81	28 16 16 50 50
6 6	25 24 16 4	14 20 39 22	27 5 10 20 20 20 20 20 20 20 20 20 20 20 20 20	13 8 8
& 4 &	88 23 28 34	51 51 39 43	8888888	4 4 8 8 8 s
		4 3 2 1 Surface		
2 2 -	⊕ № 4 ₩ €)	2 3 3 1 2 Nux	∞ r o v 4 w u	4.00 0 10
			161a	161b

TABLE VII (Concluded).

Site	Corru- gated	Two	Two Color Painted Ware	inted	Three	Three Color Painted Ware	inted		Two Color Glazed Ware	post	Thre	Three Color Glased and Painted Ware	lased Ware	Size of Sample
	_	White	Red	Buff	White	R	Buff	White	- Fed	Buff	White	Red	Buff	
97 4	4	21	13			19		60						\$
က	4	31	13		:	13	:	:	:		:	87	:	8
23	46	g	œ	:	:	20	:	:		:	:	က	:	
146 8	24	17	25			12						4		72
7	39	17	81	: :	:	ន	-	က		_:				8
9	5 51	12	22	:	:	6		-	က	:		က	: : :	67
'n	5 51	=	13	-	:	15	:		S	:	:	'n	:	
4	36	17	19	:	:	16	: :	81	9	:		4	-	
ന	. 46	œ	5 6	:	:	10	:	4	10	: :		-	:	11
63	43	12	17	:		18		:	6	:	-		:	103
_	41	15	20		:	20	- : - : - : -		81			_		148
139 4	98	12	32	:		16			7			3		89
c.	35	=	41	-:-	:	-			6	: :	:	:	: :	4
64	25	01	34		:	ន	:		2	:	:	က	:	96
Su	Surface 27	=	30	:		33			90			81		_ 26

TABLE VIII.

GLAZED WARE SERIES BY GROUND COLORS.

	Site	Corrugated	White	Red	Buff	Size of Sample
	91	59	21	20		96
,	75	54	21	25	1	113
	84	46	24	30	1	199
	85	46	20	34	1	239
	30	37	23	40		207
	82	36	28	36		149
	11	35	25	40		128
	81	30	29	41		115
		;	-		_	
121	4	70	10	20		20
	3	63	12	25		59
	2	52	18	30		27
	1	53	14	33	<u> </u>	76
104	13	67	17	16		12
	12	88	12		.	8
	11	65	8	27		26
	10	* 84	5	11		19
	9	61	22	17		36
	8	63	16	21		49
	7	59	16	25		81
	6	55	24	21		38
	5 _.	41	16	43	1	86
	3. 4	50	13	43 37		32
	3		19			
		49		32		41
	2	55	14	31		49
	1	60	7	33		66
140a	6	64		36		11
	5	48	9	43		21
	4	47	3	50		. 34
	3	67	9	24		33
	2	44	23	33	[48
	1	50	16	34	1	62
140b	14	33	10	57		42
	13	49	13	38		67
	12	68	14	38 18		167
	11	30	36	18 34		33
		33	17			
	10	:	1	50 50	1	41
	9	33	17	50		12
	8	12	35	53		17
	7	24	29	47	'	17
	6	26	23	51		34
	5	29	6	65	1	17
	4	70	5	25	1	86

TABLE VIII. — (Continued).

	Site	Corrugated	White	Red	Buff	Size of Sample
140b	3	38	12	50		40
	2	49	6	45		51
	1	48	6	46		100
149	6	33	25	42		12
	5	38	24	38		29
	4	52	16	32		38
	3	56	4	40		55
	2	45	16	39		81
71	4	51	14	35		43
	3	51	22	27		51
	2	39	39	22		57
	1	43	24	33		150
	Surface	47	23	30		225
161a	8	50	28	22		36
	7	55	24	21		29
	6	25	19	56		36
	5	62	5	33		21
	4	43	18	39		28
	3	53	17	30		36
	2	46	23	31		61
161b	4	41	16	43		74
	3	· 40	20	40		50
	2	48	24	28		102
97	6	38	31	31		13
• •	5	5	8	84		12
	4	44	24	32		34
	3	41	31	28 ·		39
	2	46	23	31		39
46	8	42	17	41		24
	7	39	. 20	41		60
	6	51	12	37		67
	5	51	11	3 8		75
	4	36	19	45		84
	3 .	46	12	42		77
	2	43	12	45		103
	1	41	15	43	. 1	148
139	4	30	12	58		69
	3	32	11	57		44
	2	25	10	65		96
	1	27	11	62	1 1	95

BLACK-ON-WHITE SERIES.

The group of samples comprising corrugated and painted black-on-white wares remains to be considered. It is not certain that these form an integral part of the series we have been considering. Still it has been shown that redware comes into being in a group consisting in addition only of corrugated and painted black-on-white ware. It would therefore be reasonable to expect that some of the samples in the present group belong immediately before the painted redware series. Such samples would be those with the highest percentages of corrugated ware.

We have some stratigraphic evidence bearing on relations in this group, however. Sherds from Sites Nos. 3, 7, 14, 15, and 50 indicate an overwhelming proportion of black-on-white ware of a peculiar style associated with plain white vessels having globular bodies surmounted by straight or constricted zones sometimes bearing a few broad coils. Sherds bearing such corrugations constitute only 1 to 4 percent, but inasmuch as the bodies of the vessels were not corrugated, these values do not represent the correct proportions of the wares. We would suggest that about one-eighth of all the vessels bore coils. The characteristic feature of these ruins, as described in a preceding section, was the almost complete absence of masonry. At Shoptluwwayala (No. 40), on the edge of Zuñi village, we found remains of the regular pueblo type superposed on a "slab-house" with which the above types of pottery were associated. The relation of the two structures is indicated by the pottery data:—

	Corrugated	White	Red
Surface	54	38	. 8
Trench (all levels)	29	63	8

The finds in the trench are just what might be expected if the surface types were mixed at random with 2 percent corrugated and 98 percent whiteware of "slab-house" type.

The sequential relations of this type appear to be identical with stratifications found by Dr. Kidder along the San Juan River ¹ and by Mr. Morris in the valley of La Plata River, San Juan County, New Mexico. ² There can be little doubt that these are the oldest remains in the Zuñi region.

¹ Personal communication from Dr. Kidder, July 4, 1916. Dr. Kidder, who saw these wares before the "slab-house" structure was discovered, pronounced them closely affiliated with the sherds found by himself.

³ Morris.

This suggested ranking the samples in this group in ascending order by percentages of corrugated ware (Table IX). We have no proof for this series, except the foregoing indications, but offer it as a tentative suggestion.

It will be noted that following the wares of "slab-house" type, the value for corrugated ware jumps to 24 percent. If as we are inclined to believe, "slab-house" corrugated really constitutes 12 percent or more, the gap is not so great.

TABLE IX.

BLACK-ON-WHITE SERIES.

Site	Corrugated	White	Size of Sample	
15	1-	99	67	
14 a	2	98	208	
b	2-	9 8	108	
c	1-	99	188	
7	2	98	87	
50	2-	98	107	
3	4	96	83	
51	24	76	' 87	
57	30	70	62	
49	33	67	32	
72	40	60	35	
70	42	58	12	
166	48	52	39	
16	50	50	10	
73	50	50	6	
2	62	38	28	
83	67	33	29	
35	75	25	48	

SUMMARY.

The sequence of pottery types suggested in the preceding pages may now be summarized. It is possible that the earliest remains in the region are slab-house sites with 96 to 98 percent black-on-white painted ware with 2 to 4 percent corrugated. (These figures may be 88 and 12 percent respectively, instead). Black-on-white painted ware then decreases from 76 percent to about 30 percent, while corrugated increases correspondingly.

Redware now makes its appearance, increasing to 43 percent. From zero to 14 percent it consists of black painted decoration; at the latter point black and white painted decoration appears as well. At about 20 to 25 percent glaze decoration appears; the additional decorations on redware introduced being black glaze, black glaze and white paint, black glaze and white paint on a red ground with black glaze on a white ground. Meanwhile corrugated decreases from 50 to 55 per cent to 30 percent, and whiteware decreases from 45 or 50 percent to about 20 percent, then rises somewhat to 27 percent. With the rise in whiteware, black glaze appears as a decorative technique as well as black paint. Probably buffware now begins to appear. At this point a hiatus in the data interrupts the sequence.

When the sequence is resumed, corrugated decreases from 14 percent to 0 or 6 percent on the surface of historic ruins and blackware makes its ap-

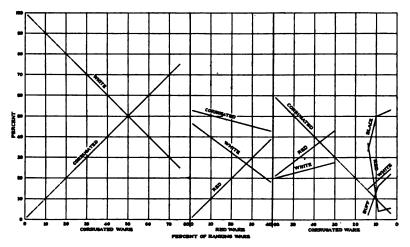


Fig. 6. Sequence of Wares, According to Ground Colors.

pearance at 33 percent increasing to about 50 percent. Redware reappears as the dominant type of painted ware, with identical decorative techniques, at 37 percent, but decreases rapidly to 4 percent, after which it remains stationary. Whiteware, including decorations in black paint, black glaze, and in addition black paint or glaze with red paint, reappears at 14 percent and increases to 23 percent. Buffware increases at the same time from 2 percent to 22 percent; decorations only in brown paint at first, then in brown and red paint, black glaze, and black glaze with red paint.

This sequence of types is shown graphically in Fig. 6. The division into groups has been retained, for, since we have no chronological unit the

percentages of the ware used in ranking each group must be used as the base for plotting. This method gives a rectilinear distribution for the ranking ware. The overlapping which appears between the several groups must be recognized as an expression of accidental variations.

Before discussing the hiatus in the suggested sequence it will be advantageous to point out the sequence of techniques corresponding to the ranking developed above. The data are given in Table X, in which the first group — the black-on-white series — is given in contracted form. The technical types are those recognized by Nelson for Tano pottery, except that biscuitware, and Type IV, an historic two-color glazed ware do not seem to occur. On the other hand, a new type, a coarse plain blackware, which does not occur in the Tano ruins, is found here. We have found it necessary to separate two-color painted ware from three-color painted ware in Type I.

These results show no marked changes from the results obtained by ranking according to body color, yet are significant precisely on that account. Possibly corrugated ware rises from 1 percent to something less than 75 percent and then drops back to 30 percent. Correspondingly two-color painted ware decreases from 99 percent to about 50 percent and thence to about 35 percent. Three-color painted ware appears at the midpoint of the painted redware series, but never amounts to more than a few percent. Two-color glazed ware and three-color glazed and painted ware now appear together, but each as only 10 or 15 percent of the whole. Resuming the sequence after the hiatus, we find corrugated decreasing from 14 percent to 3 percent, blackware appearing at 33 percent and increasing to 50 percent, three-color glazed and painted ware decreasing slightly from about 16 to 6 percent, while the other wares remain stationary: two and three color painted wares at about 30 percent and two-color glazed ware at about 10 percent.

It seems legitimate to draw two conclusions from the foregoing: first, among the decorated wares the variations in decorative technique seem to have played a minor rôle in comparison with the variations in color combinations; and second, it is probable that glazed decoration was introduced rather suddenly into two-color and three-color decorative schemes in this region. These results are consistent with our previous findings.

¹ Kidder, (a), 454, says there is no biscultware in the pottery from Hallonawa and Heshota'utlla at the Peabody Museum.

TABLE X.

SEQUENCE OF TECHNIQUES.

Corru-	Туре І			Type II	Type III	Black Ware
Ware	Two and	Two and Three Color Painted Ware			Three Color	
	Two Color	Three Color	Two and Three Color	Two Color Glazed Ware	Glazed and Painted Ware	
1	99		99	1	· · · · · · · · · · · · · · · · · · ·	
4	96	1	96	I		
24	76		76	1		
7 5	25		25			
45	55		55			
39	61		61	1	!	
35	65		65			
50	50		50	1	į	
65	35		35		i	
45	55		55	1	1	
56	44		44		1	
62	38		38	1	1	
55	45		45			
45	55		55	i	İ.	
48	52		52	1	'	
53	46	1	47		j L	
60	37	3	40	İ	! '	
59	37	4	41	1	į	
53	45	2	47		I	
54	39	7	46			
48	50	2	52		i	
51	47	2	49	1) 	
35	65	_	65	1		
36	64		64	I	İ ı	
50	46	4	50	1		
48	42	10	52	I	ļ	
38	59	3	62	1	ļ I	
59	35	5	40	1		
54	33	9	42	2	2	
46	25		25	18	11	
4 6	28	3	31	10	13	
37	35	9	44	8	11	
36	57	. 6	63	1		
35	20	1	20	33	12	
30	51	16	67		3	

TABLE X.— (Continued).

Corru-	Туре I			Туре II	Туре III	Black Ware
gated Ware	Two and Three Color Painted Ware			Two Color	Three Color	
	Two Color	Three Color	Two and Three Color	Glazed Ware	Glazed and Painted Ware	
12	27	16	43		13	21
19	8 .	12	20	11	15	35
9	20	6	26	11	. 19	35
12	23	12	35	7	16	30
12	21	12	33	. 6	19	30
15	20	16	36	5	10	34
13	20	15	35	4	6	42
14	18	13	31	3	17	35
11	12	7	19	6	24	40
16	15	8	23	8	4	49
12	18	3	21	8	11	48
10	19	2	21	11	8	50
8	21	6	27	7	ļ	58
15	26	7	33	11		41
13	38		38	8	20	21
7	24	4	28	2	2	61
7	9	5	14	14	14	51
12	18	6	24	9	6	49
8	22	9	31	8	4	49
4	20	12	32	9	2	53
5	28	2	30	7	12	46
3	24	11	35	6	3	53
4	21	7	28	14	7	47
2	28	3	31	14	5	48
1	37 ·	1	37	8		54
3	26	3	29	12	7	49

For comparison, Nelson's table for San Cristobal pueblo ² is given below, the values having been reduced to percentages. The wares appear in the Tano region in the order two and three color painted wares (Type I), two color glazed wares (Type II), three color glazed and painted wares (Type III), historic two color glazed wares (Type IV), and modern painted wares (Type V), accompanied at all times by corrugated and biscuitware. The order for decorated wares (other than plastic decoration) in the Zuñi region is evidently much the same: two and three color painted wares (Type I),

¹ Average of surface samples of Sites No. 13, 45, and 48.

² Nelson, 166. The fluctuation in corrugated ware would appear to be as marked as that in any other type.

Thickness of Section	Corrugated Ware	Biscuit- ware	Туре I	Туре II	Type III
1st ft.	. 37	7	1	52	3
2nd "	31	4	1	62	2
3rd "	15	1	6	76	2
4th "	21	3	5	71	
5th "	17	4	1	78	
6th "	19	5	2	74	1-
7th "	23	4	18	55	İ
8th "	25	1	52	22	
9th "	46	1-	53	1	
10th "	55	1-	45		

two color glazed wares (Type II), three color glazed and painted wares (Type III), and modern painted wares (Type V). Biscuitware and an historic two color glazed ware (Type IV) do not appear, but a new type, blackware, appears after Type III. The principal difference would seem to be, so far as our data show, in the tendency to use painted rather than glazed wares in the Zuñi region. Glazed wares (Types II and III) appear at about the same period in this region and never attain prominence. It may ultimately be necessary to qualify the last statement, if, as we suspect, three color glazed and painted ware played a more important rôle in that section of the sequence represented by the hiatus in our data.

The sequence given by Morris for the upper San Juan Valley ¹ parallels both Tano and Zuñi sequences in general outlines. It approximates the Tano more closely than the Zuñi, but the finer discriminations among the earlier wares show a close kinship to the Zuñi wares of the same period.

It is now possible to suggest definitely what the characteristics of the missing data should be. The sequence here should show a decrease in corrugated from 30 to 14 percent, and another in whiteware from 27 to 14 percent. Redware would be the dominant decorated ware, decreasing only slightly from 43 to 37 percent. Buffware would probably not amount to more than a few percent. Blackware would appear in this group and attain a proportion of 33 percent. The changes in technique which may be expected would not be great: a decrease in Type I from 35 to 20 percent, with Types II and III remaining at about 10 or 15 percent, but possibly with a rise and fall in Type III.

¹ Morris. 27.

MOVEMENTS OF POPULATION.

With an outline of the sequence of pottery types at hand, it is now possible to speak of the time-relations between the ruins.

In spite of the limitations on the occupation of the Zuñi region imposed by its natural resources, certain general shifts of population have taken place. While the number of localities with optimum conditions for producing food and water is strictly limited, the wide scattering of former habitations throughout the region is strong evidence for the latent possibilities of the whole. Nevertheless, the advantages of these localities are so marked that they have been the scene of repeated settlements. But the striking feature of these settlements is their transitory character. Ash heaps, as we have repeatedly stated, are a minus quantity; the fact which determined the course of this inquiry. It is certainly startling to come on ruin after ruin with long rows of rooms stretching away in straight lines or graceful curves, but with hardly a sign of ashes and broken pottery - in short, every jot of evidence pointing to a flitting occupation. The natural result has been to produce a constant movement about in the valley, a sort of milling around. It is somewhat curious to find nevertheless that the center of population has shifted from period to period.

The fact is brought out by grouping the ruins furnishing the data for the foregoing sequence. For convenience of comparison four periods are chosen corresponding to the four general groups of pottery types. The location of the ruins is shown in Figs. 7 to 10. In addition, Mr. Nelson has placed at my disposal sherds and data from ruins as far east as Acoma, south to the Rito Quemado and west to St. Johns, Arizona, some of which undoubtedly belong with the ruins in the central region.

The oldest group is shown in Fig. 7. Ruins with pottery of the "slab-house" type have been differentiated from those with black-on-white painted ware and corrugated of the ordinary type. The ruins are not localized, but are scattered through the Zuñi Valley and occur occasionally outside. Outside of the area shown, several were found along the eastern border of the great lava sheet in the Cebolla-Cebollita valleys, several west of Atarque as far as Ojo Bonito, and again at Springerville and St. Johns on the Little Colorado. Some of these, as for example, at St. Johns, are probably slab-house structures, although the reconnaissance data do not make this certain. At Sites 14 and 7 in the Ojo Caliente district there are evidences of slab-house villages.

In the second group ruins with less than 14 percent redware are differ-

entiated from those with 14 percent or more (Fig. 8). It will be remembered that this point marked the beginning of three-color painted ware. It also proves a significant point of division with regard to distribution. The group as a whole is scattered through the valley from the Ojo Caliente district to Inscription Rock and a number of sites appear on the plateau. But the distribution of the ruins, most of which are small, shows a different focus of occupation for the two classes. Ruins with less than 14 percent

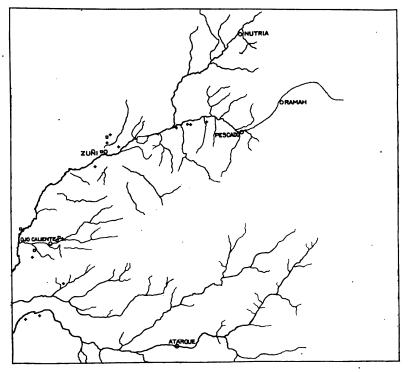


Fig. 7. Location of Ruins: Black-on-White Series. Squares, slab-house type: crosses, black-on-white type.

redware center in the Ojo Caliente district while relatively few are located up the valley. Outside of the area shown, they lie principally along the eastern side of the great lava sheet south to the Point of Malpais and several occur near Acoma. Three near Rito Quemado suggest Tularosa influence. On the other hand, ruins with more than 14 percent redware center from the Pescado district (where there are undoubtedly more than shown) through Ramah to Inscription Rock. A number are in the Zuñi district and fewer near Ojo Caliente. Similar ruins also occur in the Cebolla-Cebollita valleys north of the Point of Malpais and one further east in the

Acoma Valley. Four lie within ten miles west of Atarque, but all except the easternmost suggest affiliations with Tularosa wares rather than with Zuñi. The same is true for three ruins just south of Springerville. A shift in the center of population undoubtedly occurred during this period. The inauguration of pueblo architecture which accompanied it will be referred to later.

Ruins where glazed pottery was in use center about Pescado, Ramah, and

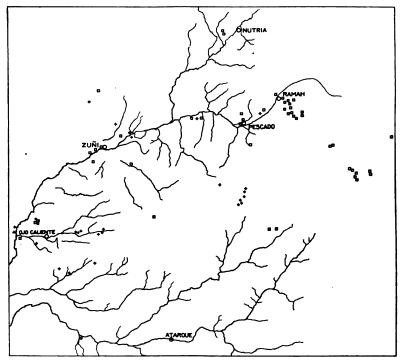


Fig. 8. Location of Ruins: Painted Ware Series. Crosses, two-color painted ware squares, three-color painted ware.

in the Inscription Rock section (Fig. 9). Only three lie further down the valley. More are situated on the Plateau to the south, but some of these (at Ojo Hallado, Ojo Pueblo, and at the Delfin Chavez ranch) strongly suggest Tularosa wares. There are four or more east of Springerville, but again Tularosa affiliations are suggested by one. Finally, several ruins to the east near Cebollita are of the same type.¹

[!] Hodge in the Annual Report of the Smithsonian Institution for 1914 (46), refers one of these ruins tentatively to the Tangi, or Calabash, clan of Acoma. This does not seem likely since pottery from a ruin probably identical with this one bears a marked similarity to that of the Zufii Region.

The last group (Fig. 10) is that of the late and historic ruins. They center down the valley again, near Zuñi and Ojo Caliente, where the occupants of the region were discovered by the Spaniards of the sixteenth century. We have distinguished the post-Conquest refuge villages on the map, and it will be seen that they too cluster in the same regions. Not a single ruin of this period lies in all the country between Zuñi and Acoma, for all of which we have information. Thus, another change in the focus of occupation is indicated, a change in the opposite direction. It will be

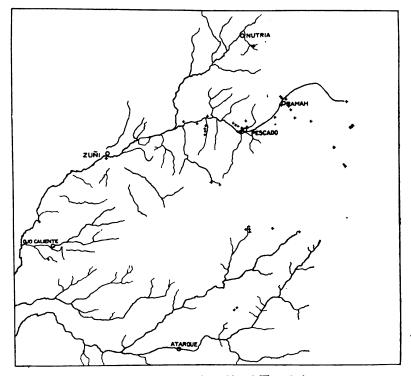


Fig. 9. Location of Ruins: Glazed Ware Series.

remembered, however, that despite the similarity of the wares there is a hiatus in our data between the group of "glaze" sites and these late and historic ruins. No ruins with wares which would fill the hiatus in the pottery sequence lie within the bounds of this region. This gap accompanied by a shift in the center of population would inject a very strong element of doubt into the postulated relations between the late sites and "glaze" sites were not the specific points of similarity between the wares of the two groups so remarkably close.

We have at hand some suggestive data on the point. No ruins of this period lie east of Zuñi, but along the Little Colorado to the west are a number affiliated with these. Two small ruins on the west bank of the Little Colorado about three hundred and five hundred yards above the bridge at St. Johns show sherds identical with those of Pinnawa (No. 33). Three others are also of the Pinnawa type but probably slightly earlier: the first, a small pueblo ruin on a rock by the Little Colorado about four or

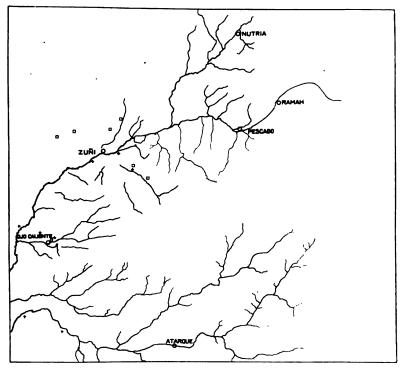


Fig. 10. Location of Ruins: Late and Historic Sites. Crosses, late and Conquest pueblos; squares, post-Conquest refuge villages.

five miles below Springerville; the second, a pueblo ruin at Ojo Bonito, ten or twelve miles due south of Ojo Caliente, and the third, a rectangular pueblo ruin about five miles southeast of Ojo Bonito on the road to Atarque.

These specific data based on sherd collections point to the west and so do all published material available. The descriptions by Fewkes and Hough of ruins and pottery in the Little Colorado Valley are fairly full and admirably illustrated. There can be no doubt that some of these ruins bear a close relation to those we have been discussing and in particular we would point out the following ruins where the essential similarity of the pottery

has been emphasized by both investigators. Beginning on the east, these are the "Stone Axe" ruins in the Petrified Forest, along the Mogollon Rim possibly those at Pinedale and Shumway on Showlow Creek should be included, "Four Mile" ruin near Taylor on Silver Creek, and along the Little Colorado, the Chevlon ruin fifteen miles east of Winslow and the Homolobi group of ruins near that town. Possibly we should include the Biddahoochee ruins north of Holbrook, but the decorative style of wares there stands somewhat apart from the others. In these ruins redware predominates, redware with decoration in black or black and white, painted or glazed or both, which is a unit with the wares from Hallonawa and Hecota'utlla figured by Fewkes in the Putnam Anniversary Volume. The essential difference between them is in the presence of a yellowware, not the "fine yellow ware" of the Hopi, but the buffware of the Zuñi historic pueblos. We cannot but doubt the dictum which populates these pueblos with Hopi clans on the say-so of native informants in the face of the demonstrably close similarities between these wares and their Zuñi counterparts. It remains to be demonstrated that the Hopi wares have evolved from these. The question is still open and will never be settled by the tacit denial of historical relief and by arrogating all variations and combinations of pottery styles to the principle of clan mingling.

It is suggested then that the ruins constituting the hiatus in our sequence lie down the valley of the Little Colorado, of which the Zuñi River is a tributary. If it should ultimately prove that there was actually a movement of population eastward through this valley to the location of historic times, the fact might also demonstrate that there was no hiatus in the sequence but that we have been dealing here with the segments of two sequences which may, or may not, be of independent development. However, it must be noted that these ruins of the Little Colorado mark the western limit of the area of glaze decoration, and further, that a sequence of these ruins would be expected to begin about where the ruins of the eastern Zuñi Valley leave off. An actual continuity of occupation of the Little Colorado Valley is therefore not beyond the range of probability, but the problem merges here into that of the glaze area as a whole.

One final qualification must be placed on the sequence as a whole. It may be ultimately proven, as suggested by the marked similarities between the data for this region, the Tano country and the Upper San Juan, that there has been a parallel development over a large section of the Southwest. In that event, the several segments of our sequence may be found to be disparate parts of the general scheme and only artificially placed together here; but this point cannot be answered on internal evidence alone.

¹ Fewkes, (b), 59; see also 61, 64, 69, and 73 for other differences.



POTTERY TYPES.

The sequence of pottery types has been developed in the preceding sections. Some further data on the wares themselves are available for a consideration of the pottery art simply as a cultural trait. As no extensive excavations were made, there are few whole vessels in our collection. This sets a definite limit on the description of the wares, but the deficiency of material is made up by a large sherd collection.

The descriptions which follow mark significant points in the sequence outlined above. The practical limitations imposed by the material made it necessary to select wares in ruins offering, first, large random collections of sherds the analysis of which placed the ruin definitely in the series, and second, collections of large sherds which would adequately represent the wares involved. Only typical designs are shown, the result of laborious grouping of the sherds, and their respective prevalence is indicated. The proportion of bowls to jars is also given, but it must be kept in mind that dippers are not easily separated from bowls on the basis of sherds. In view of the fragmentary evidence offered by the collection it does not seem advisable to attempt a description of the structural technique—paste composition, etc.—with the exception of the brief note on the "slabhouse" wares of unusual interest. The order of description follows the sequence above.¹

Black-on-White Series: 1-4 percent Corrugated (Slab-House Type). Sites 14 and 40.

Corrugated. Medium-sized jars with plain globular body from which springs a straight neck bearing unusually broad coils 2 (Fig. 11a). The coils are frequently obliterated in part (Fig. 11c) or entirely erased and then reindicated by incised lines (Fig. 11b). Plain vessels without coils are not common (Fig. 11d and e) but they differ from the above only in that respect. The surface is rough.

Black-on-White. Bowls are somewhat more common than jars. Vessels

¹ In the illustrations the ground colors of the sherds are not indicated: the painted and glazed decorations are indicated as follows: black by solid black areas; white by dotted areas; brown by hatched areas; and red by areas of broken hachures.

² A similar vessel from St. George, Utah, is figured by Holmes (Fig. 242).

are small and medium-sized with rather thin walls: rims are simple and straight. A thin-walled type which prevails contains a very large proportion of tempering material — chiefly sand, sometimes crushed stone. The

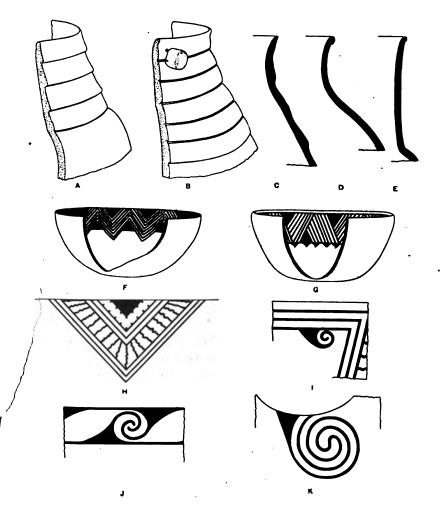


Fig. 11. Pottery of Black-on-White Series: 1-4% Corrugated. a-e, g-k, Site 14; f, Site 40; f-j, bowls; a-e, and k, jars. a, c-e, h-k, \times \(\frac{1}{2}\); b, \times \(\frac{3}{2}\); f, 8 in. diameter; g, 5\(\frac{1}{2}\) in. diameter.

thicker-walled type has a fairly homogeneous smooth paste. Both types have a relatively rough surface finish, but in the thin-walled type the thin bluish white slip fails to cover the coarse tempering material. Bowls are

decorated only on the inside. The decorative units on bowls, and perhaps on jars, are pendent from the rim, whether they occur as independent units (Fig. 11h) or in bands or panels (Figs. 11f and g). The commonest unit is the pendent triangle (Fig. 11f). This general type of decoration is modified by the use of secondary triangles (Fig. 11g), by line-bordering dots (Fig. 11h), by bands of wavy lines (Fig. 11h), or by the single or hooked spirals. These also occur on a few sherds as independent units (Fig. 11i and j). A double spiral occurs pendent from the rim of a jar (Fig. 11k). Similar double spirals with the enclosed areas filled in with wavy lines also appear. Most bowls and some jars show a black line on the rim.

Painted Ware Series: 2 percent Redware. Site 24.

Corrugated. One-sixth of these sherds bear plain broad coils with a smooth vessel body reminiscent of the slab-house type. The remaining sherds bear narrow corrugations, both indented and plain, in the proportion of three to one. A few sherds show both plain and indented coils. Fee if any, of these vessels had smooth bodies.

Black-on-White. Bowls constitute three-fifths of the forms. I view commonly have a black line along the rim similar to that on the corresping slab-house type. The principal decorations consist of areas of hatched with fine lines in bold rectangular patterns (Figs. 12a and Occasionally checker-board effects (Fig. 12c) and panels of parallel line (Fig. 12d) occur. Jars present the same style of treatment, the comonest design (Fig. 12c) being a cross-hatched stepped figure running diagonally across the jar. The dot-bordered triangle occurs occasionall, (Fig. 12f).

Black-on-Red. Sherds of this type are too few for characterization.

This description fits the black-on-white series fairly well. Small samples and small sherds made it impossible to treat a typical collection from that series.

Painted Ware Series: 10 percent Redware. Site 164.

Corrugated. Usually the whole vessel bears narrow corrugations except for short plain flaring rim. The typical vessel has indented coils, few plain coils, and a few others show a combination of plain and indented coils. One sherd bears a curious checker-board pattern of alternate plain and indented areas. Additional ornamentation occurs in the form of small spiral coils applied to the exterior surface (Fig. 18c).

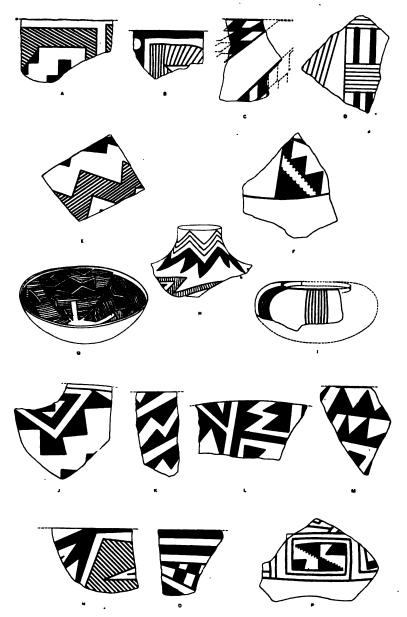


Fig. 12. Pottery of Painted Ware Series: 2% Redware (a-f) and 10% Redware (g-p). a-f, Site 24; g-p, Site 164. a-d, g, j-o, bowls; e, f, h, i, and p, jars, a, b, e, i and j, $\times \frac{2}{3}$; c, d, f, k-o, $\times \frac{1}{3}$; h and p, $\times \frac{1}{15}$; g, $\times \frac{1}{15}$.

Black-on-White. Jars constitute four-fifths of this class, bowls and a few, dippers, the remainder. The uniform thickness of the bowls with edges finished square-across is noteworthy. A marked change appears in the style of decoration. Unlike the fine-line designs of the earlier black-on-white series, the designs are executed in broad lines (Fig. 12j-m) making great use of triangular areas and interlocking triangular figures of the step type. Combinations of fine-line and broad-line designs are less common (Fig. 12g and n). Occasionally the checker-board pattern occurs with a broad-line pattern (Fig. 12o). Jar patterns are more clearly reminiscent of the earlier black-on-white series. The prevailing pattern (Fig. 12h) suggests a juxtaposition of broad-line and fine-line areas in step figures running diagonally across the vessel, but the figures usually contain more acute angles than corresponding designs of the earlier series. Occasionally panel decorations involve the dot-bordered triangle (Fig. 12p).

Black-on-Red. Nine-tenths of these vessels are bowls. Both bowls and jars have a community of decoration with similar vessels of black-on-white ware. One fragmentary small bowl (Fig. 12i) bears a unique decoration.

Painted Ware Series: 30 to 32 percent Redware. Sites 86 and 96.

Corrugated. Vessels are normally entirely covered with narrow corrugations even to the very edge of the flaring (?) lip. The indented coil prevails; plain as well as combined plain and indented coils are relatively rare.

Black-on-White. There is very little variation in the designs applied to black-on-white, black-on-red, and black and white-on-red wares. All of the designs figured (Fig. 13a-i) are common. Two-fifths of the black-on-white vessels are bowls; with these are a few dippers. A characteristic decorative treatment is shown in Fig. 13a. Jars show the same general style of treatment (Figs. 13b, c, and e). Fine line hachure work is conspicuously absent.

Black-on-Red. Two-thirds of the sherds are from bowls. The common bowl (Fig. 13g) and jar (Fig. 13h) decorations closely resemble those in black-on-white.

Black and White-on-Red. Only bowls are represented, not a single jar sherd being found. This type of ware has long characterized the Zuñi region in museum collections. Its distinctive features are pronounced. The bowls are commonly decorated in black on the inside and in white (Fig. 13d and f) or black and white (Fig. 13i) on the exterior surface. The interior decorations are usually panels extending over the whole surface. The area is rather closely filled with broad-line and hachure figures interlocking. The exterior decoration is open and delicate, consisting of angular

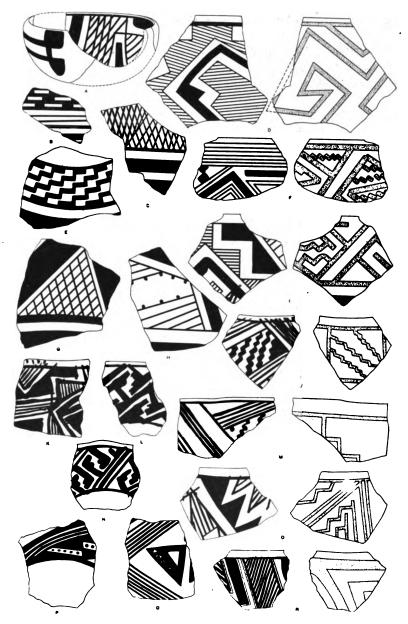


Fig. 13. Pottery of Painted Ware Series; 30-32% Redware. a-i, Sites 86 and 96. Pottery of Glazed Ware Series. j-r, Site 146. a, d, f, g, i-k, m, o, p and r, bowls; b, c, e, h, and q, jars; l and n, dippers. e, d, f, i-r, \times 1; b, c, g and h, \times 1; e, \times 1.

meanders or rectangular panels extending only about half-way down the side but encircling the bowl.

The similarity of decoration in black paint in all three wares is perhaps closer than the sherds illustrated show. The decoration of the exterior of the bowls in white paint shows a different stylistic treatment.

GLAZED WARE SERIES. SITES 81 AND 82.

Corrugated. Indented narrow corrugations covering the vessel with the exception of the plain rim mark the prevailing form. A few sherds show plain coils, without indentations.

Black Paint-on-White. Bowls comprise one-third of this ware.

Black Paint-on-Red. There are twice as many bowls as jars of this ware. A typical example of broad-line work (Fig. 14b) shows panels of triangular helices.

Black and White Paint-on-Red. Only one vessel in ten is a jar. The characteristic decoration of the interior of the bowl is in black, of the exterior in white (Fig. 14a) and less frequently in black and white.

The sherds from these ruins bearing glaze decoration are too few for characterization.

GLAZED WARE SERIES. SITE 71.

Corrugated. The typical vessel is entirely corrugated except for a short distance at the rim. The coils are characteristically narrow and indented, but sometimes plain or both plain and indented together.

Black Paint-on-White. Jars constitute seven-tenths of this group; the remainder bowls and a few dippers. The decoration is much like the earlier wares of the same type: broad-line designs being rather prominent. Figs. 14c-f are equally common. The black paint is sometimes of a brownish or purplish-brown tinge.

Black Paint-on-Red. Three-quarters of the vessels decorated in black paint-on-red are bowls. The designs on both bowls and jars are not novel (Figs. 14i and 14g, respectively).

Black and White Paint-on-Red. No jars of this type were found. Patterns on these bowls do not differ from those on similar wares from earlier ruins (Figs. 14h and j). The usual color combination is black paint-on-red inside of the bowl and white-on-red outside. Less commonly, the interior is covered with white paint bearing the design in black and with the exterior a plain red.

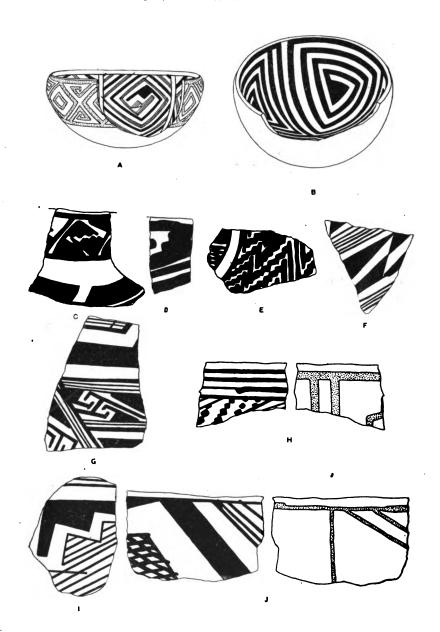


Fig. 14. Pottery of Glazed Ware Series: Sites 81, 82 and 71. a and b, Sites 81 and 82; e-j, Site 71. a, b, h-j, bowls; c-g, jars. a, $10\frac{1}{2}$ in diameter; b, 5 in diameter; c-j, $\times \frac{1}{2}$.

Black Glaze-on-Red. Bowls and jars in the relation of seven to three. Black glaze-on-white and other combinations as black glaze-on-white inside with plain red outside, and black glaze and white paint-on-red inside with black and white paint-on-red outside also occur infrequently.

GLAZED WARE SERIES. SITE 149.1

The following description is furnished not by a surface sample but by a relatively small sample from the uppermost six-inch level of the ash-heap. The sherds figured (Fig. 15) are all from the surface, however.

Corrugated. All sherds bear narrow indented coils, except from the plain rim section.

Black Paint-on-White. One-fourth of the vessels are bowls. The black paint is commonly quite brown, having a "washed out" appearance. No new type of decoration appears on either bowls or jars, with the exception that diagonal step patterns are not nearly so common on the latter as designs more of the bowl type (Fig. 15a and c). Occasionally, bowls are decorated both inside and out.

Black Paint-on-Red. Bowls are half again as common as jars. No new features of design in this type appear at Inscription Rock.

Black and White Paint-on-Red. Only bowls were found. The designs are similar to the earlier examples. Beside the usual combination of black-on-red inside with white-on-red outside (Fig. 15d) there are also sherds showing the same interior decoration but both black-and-white-on-red on the exterior (Fig. 15e).

Too few glazed pieces occur in the ash heap sample for descriptive purposes. Nevertheless, a number of examples of this style of decoration from the surface collection are shown (Fig. 15f-m). The commonest decoration is in black glaze-on-red inside with white paint-on-red outside (Fig. 15f). Similar sherds, about as common, have both black glaze and white paint-on-red outside instead (Fig. 15h-j and l). Red bowls, decorated in black glaze and white paint outside, but coated white inside, on which designs in black glaze have been applied (Fig. 15g and k) are frequent. Other combinations are black glaze-on-white inside the bowl with a plain red exterior (Fig. 15m); red bowls with black glaze within and black and white paints outside; black glaze-on-red inside and on large areas of white outside. Bowls seem to be most abundant and to bear the simpler line designs as a rule; the jars are decorated in black glaze on white areas applied to the red ground of the vessel.

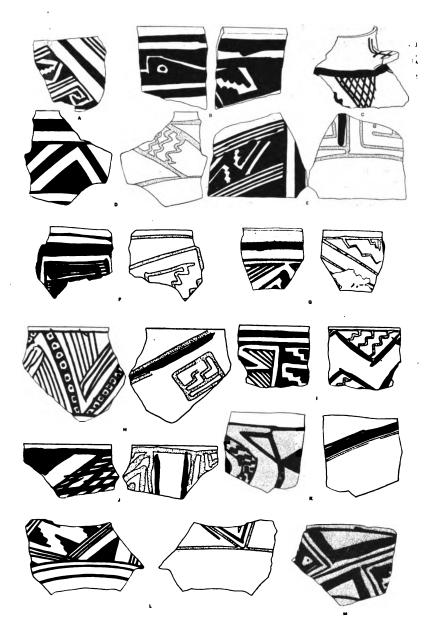


Fig. 15. Pottery of Glazed Ware Series: Site 149. a and c, jars; b, d-m, bowls. a-m, \times j.

It must be remarked in passing that black glaze sometimes appears as vivid green when passing over a white ground but attains a characteristic black where the same line strikes the red ground color of the vessel. This has already been pointed out by Dr. Kidder. We have considered all such greens, brownish greens, etc., as black, as they really are.

GLAZED WARE SERIES. SITE 146.

Corrugated. The corrugated ware is the usual type of jar entirely covered with narrow indented coils except for a plain flaring rim.

Black Paint-on-White. Two-thirds of the sherds are parts of jars, and there are a few dipper sherds. Bowls are decorated on the inside in a rather free style (Fig. 13k). The usual dipper design shows the interlocking key figure (Fig. 13 l and n). The jars sometimes show bold curvilinear forms using alternate areas of broad-line and hachure figures.

Black Paint-on-Red. Bowls number three-fifths of the whole. They have plain straight rims and are rarely decorated on the exterior surface. The painted designs resemble those in black on white: the same is probably true for the jars. Fig. 13p is a characteristic bowl pattern.

Black and White Paint-on-Red. Jars are represented by an occasional sherd only (Fig. 13q). Like the bowls decorated in black paint alone, the bowls of this type have plain rims. As at all other sites, the commonest color combination of the bowls is black paint-on-red inside with white-on-red outside (Fig. 13j, m, and o). Occasionally, a variant with white as well as black paint on the inside of the bowl appears (Fig. 13r). Besides the common designs figured, a less common pattern consists of the familiar interlocking steps of broad-line and hachure areas. Occasionally, the outside white designs involve the hooked spiral figure.

There are too few glazed pieces for adequate description, but it can be said that they closely resemble the painted sherds in decorative execution. The description of the same types of wares at Site 149, Inscription Rock, applies equally well here.

The wares we have been describing for several sites in the glazed ware series are equally characteristic of all of the sites. They have a decided individuality which has long been recognized. So far as our sherd collection shows there is no means of separating examples of one type of ware from one ruin from those of the same type from another ruin. Where the mixture of pottery from two ruins in the Hemenway Collection accidentally occurred, as is well known it was found impossible to separate them again. Dr. Fewkes has published on this combined collection from Hallonawa and

Hecota'utlla. The vessels figured by him are characteristic and admirably illustrate both design and color schemes, save that we suspect that the red are printed in too light a shade. Our sherd collection would indicate, however, that at Hecota'utlla at least an adequate collection would include quite a few red vessels with large white areas decorated in black.

LATE AND HISTORIC SITES. SITE 33.

Corrugated ware and painted wares of black-on-white, black-on-red, and black and white-on-red varieties at this site, Pinnawa, differ not at all-from similar wares elsewhere. Even a variant with white paint only on the exterior of a red vessel (Fig. 16k) is clearly of the same type. The same is true for two-color glazed wares, black-on-white and black-on-red (Fig. 16j), and it is particularly significant that even so highly specialized a ware as three-color glaze shows identical patterns in redware decorated in black glaze or black glaze and white paint on the interior and with white paint alone or with white paint and black glaze on the exterior (Fig. 16 l-o). There is a certain community of these wares with those described from the earlier ruins. It is rather startling then to find wares of different type which, as has been stated in a previous section, bear decided affinities with pottery from ruins down the Little Colorado.

Blackware. Sherds of this type are identical in character with those of the Zuñi cooking vessels of today. The ware is undecorated, dull, lacking a slip, rather rough and usually black, although often a dirty brown or gray. Their form was probably that of the larger jar and "slipper" pot of today.

Black and Red-on-White. All types of decoration in black and red on white, both painted and glazed, are more plentiful in the lower levels of the Pinnawa ash heap than near the surface. The type uniformly presents a dead white ground bearing brilliant red lines (but sometimes brownish) together with black paint or black glaze. White bowls are decorated on interior and exterior with black and red paints (Figs. 16a and e) or on the interior only (Fig. 16b). Red bowls occur with black and red paints on a white ground on either exterior or interior and in the latter case with or without white lines on the exterior. The patterns in glaze are identical: black glaze and red paint on a white ground, either of a white jar (Fig. 16c) or bowl (Fig. 16d, f-h) or one of redware bearing a white ground (Fig. 16i). The character of the lines involved in these patterns is quite different from those on sherds of other wares. These seem very sketchy.

¹ Fewkes, (c); also Matthews, 151 and 153.

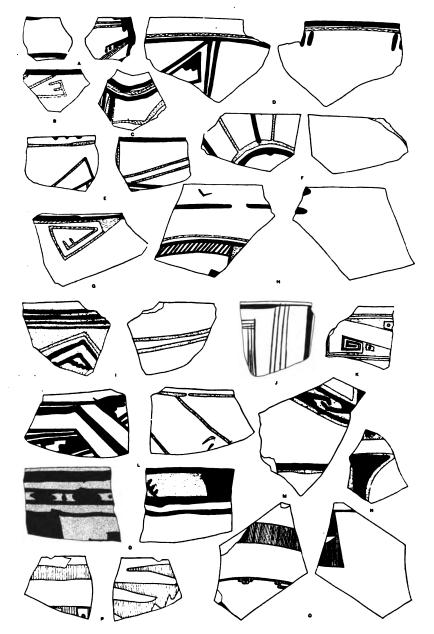


Fig. 16. Pottery of Late and Historic Sites: Site 33. a, b, d-l, o-q, bowls; c, m, and n, jars. a-q, \times $\frac{1}{2}$.

Some of the sherds figured are from the ash heap: d, 1 foot 6 inches deep; a, b, and e, 4 feet 6 inches; g, 5 feet; c and i, 5 feet 6 inches.

Brown Paint-on-Buff. Buffware ranges from lemon yellow to deep salmon in color. It is usually pale and lacks depth of color. It would not be confused with the fine Hopi yellow. The brown paint, employed usually in broad lines and areas (Fig. 16p and q), is also light. Besides brown-on-buff, brown-bordered red areas are also patterned on a buff ground. A single sherd shows black paint-on-red on the inside of a bowl with red paint-on-buff outside.

LATE AND HISTORIC SITES. SITE 48.

The wares from Site 48, Mattsakya, are identical with those of Pinnawa. The sherds of the upper levels of the Pinnawa ash heap cannot be distinguished from those at the base of its Mattsakya counterpart. The sherds illustrated (Fig. 17) clearly bring out this point. A bowl sherd decorated in black glaze-on-white (Fig. 17a) shows the influence of the black and red-on-white designs. Black and red-on-white ware is less plentiful in the upper parts of the Mattsakya ash heap than in the lower; a condition similar to that at Pinnawa. Both black paint (Fig. 17e) and glaze (Fig. 17c) were used. Only a small amount of redware appears here and that was somewhat roughly executed when glaze was used (Fig. 17b, f, j and l), although the patterns are of the familiar type. About one-quarter of all the sherds are buffware. Occasionally, these bear decorations in black glaze (Fig. 17k), but the common design is in brown alone (Fig. 17d, g, i and m) or in brown-bordered red areas (Fig. 17h and n). A characteristic pattern is a series of simple bands drawn around the interior or exterior of a bowl, a form which turns up again under the streets of Zuñi and is even seen in some of the older vessels in use today. The decorative style of these painted buffware pieces differs from the older style as represented in the redware found here. The bands and areas in brown or brown and red are wider than anything comparable in the wares in vogue in earlier times. In addition a tendency toward pictured forms and isolated units may be noted (Fig. 17e, i and n).

ARCHITECTURAL TYPES.

With the time-relations of the ruins determined, it is possible to inquire into the history of another cultural trait, namely architectural types.

It has often been asserted that the pueblo type of architecture was a natural outgrowth from the small house structure with rectangular cells. The fact is probably correct, but the conclusion has been based on the generalizing method, and, with the exception of Nelson's brief statement, has never been subjected to rigid demonstration.

The only statement worthy of serious consideration referring particularly to the Zuñi region is that of Fewkes.² Assuming that both portions of composite rectangular-circular ruins were occupied at the same time (Site 161 is under discussion), he argues that this is a transitional type intermediate between the older circular pueblo, where pueblo growth was limited by the wall of circumvallation, and the rectangular pueblo in which growth by accretion would make no impression on the form of the pueblo structure.

We have utilized the architectural data referring to the ruins furnishing pottery data for the foregoing sequence to investigate these points. In Table XI the ruins are grouped in three general types and ranked according to their positions in the pottery sequence. Where definite information was available, the shape and dimensions (in feet) are given.

TABLE XI.

SEQUENCE OF ARCHITECTURAL TYPES.

ercent of Ranking Ware	Slab-House Type	Ruins of Small House Type	I	Pueblo Type
1-	15?			
2	14?			
2	7?			
2	50?			
. 9	40			

¹ Nelson, 178.

² Fewkes, (a), 123.

TABLE XI.— (Continued).

Percent of Ranking Ware	Slab-House Type	Ruins of Small House Type	Pueblo Type					
4	3?		•					
24		51						
30		$57 - \square$, 20×20	٠.					
33		49						
40	} 1	72	<u>.</u>					
42	1	70						
48		$166 - \square$, $25 \times 10^{\circ}$						
50		16?						
50		73	•					
62		2?						
67		$83 - \square$, 20×10						
75		35						
		:						
1-	1	' 6						
2]	23	i					
2	1	$21 - \square$, 50×30	•					
$\overline{2}$		165	1					
2		24						
3		$17 - \square, 85 \times 20$						
5		$18 - \square$, 70×20						
6		$58 - \square$, 60×20						
7		$60 - L, 40 \times 20$						
8	1	19						
8	a b	40	1					
9	1	29						
10		167						
		76						
10		!						
10		$164 - \square$, 30×25 , etc.	1					
12	l .	5	•					
13		26	1					
13		1						
14		28						
15		$95 - \square, 20 \times 8$						
16.		$56 - \square, 21 \times 10$	•					
16		74						
18		36						
18		27						
18		$80 - \square$, 50×20	•					
19		62						
20		37						
20		38						
22			$4-\square$, 225×180					

TABLE XI — (Concluded).

Percent of Ranking Ware	Slab-House Type	Ruins of Small House Type	Pueblo Type					
22	l	$92 - \square$, 20×10						
24	1	46?	1					
25	1	$163 - \square$, 36×36						
30		, 96	1					
32	!		$86 - \Box$, (?), 250×200 ?					
39	I	90 - [, 60 × 40						
59		$91 - L, 45 \times 36$						
54		75						
47	•		$71 - \square$, 273×216					
46			$84 - 0,215 \times 150$					
46	1	•	85 — O, 150					
37		30 .						
3 6		$82 - 30 \times 10$	l					
35			$11 - \Box, 300 \times 180$					
30		$81-75\times20$						
?	;	$121 - L, 106 \times 42$						
?			$104 - \bigcirc, 240 \times 204$					
?			$149 - \square$, 300×210					
?		I	$161 - \Box$, 350×325 , and \bigcirc , 325					
?			$97 - \square$, 350×280					
?			$146 - \bigcirc ?, 170 \times 125$					
?			$139 - \square.260 \times 260$					
14-11		1	33					
7			8 - O, 210					
3			48					
6			45 .					
0			13					

These data suggest that the earliest type of dwelling was the "slab-house." Our only example of this was a semi-subterranean elliptical structure, eleven feet by eight, with adobe walls in the base of which stone slabs had been set on edge. The structure was probably covered by a brush roof. Of dwellings with rectangular cells, the small house undoubtedly preceded the pueblo type. The usual size of these is very well indicated by the tabulated dimensions. In groundplan they appear as a single straight row of rooms, or as rectangular, L-shaped, bracket-shaped, or E-shaped blocks. There is no certain evidence that the later examples of this type are larger than the others, although this is suggested. This architectural type remained in use after the introduction of the pueblo type.

The pueblo type is inaugurated after the introduction of three-color painted ware, a variety of Type I. There is no evidence to prove that in this region at least the pueblo has grown out of the small house. The evidence points rather to the direct introduction of the pueblo as an architectural type. In this connection the tendency to build large pueblos en bloc and to abandon them shortly after must be considered significant.

The prevailing pueblo types are the rectangular block built around a central court and a circular, oval, or rather polygonal, ring likewise enclosing a court. The courts often contained supernumerary buildings and wings, in some cases being substantially filled. Other pueblos are rather amorphous structures, conforming largely to natural features. While our superficial survey prevents any very definite statement, it would seem from the straight lines and regular curves involved that many of the pueblos were planned beforehand and built en bloc. It is not clear that the circular pueblo preceded the rectangular, or vice versa. Both types were evidently in use synchronously. In the two composite ruins in this region (Nos. 138 and 161) the walls of the circular sections stand higher than the rectangular. It is also true that the best-preserved ruin in the whole area is a circular ruin (No. 162) in Soldado Canyon. But it may be that a circular wall is better able to withstand undermining forces. The evidence does not seem to indicate a change in either direction.

The historic pueblos appear amorphous in groundplan (see Mindeleff's maps). This may be due to the fact that they conform to the knolls on which they lie. The post-Conquest refuge villages, possibly excepting that on Towwayallanna, are compact groups conforming closely to naturally defensible positions.

This brings us to the question of the relation of architectural type to defense. With the exception of the refuge villages, few of the pueblos show a situation clearly for defense. The two structures on Inscription Rock are in an easily defended location, particularly the northern ruin. So is Gigantes ruin (No. 146), and a few small ruins are located on mesa tops. But this is not an impressive list. Ruins are located on low knolls and gentle slopes with a good outlook. As stated in the description of the region the prevailing winds seem to have had as much to do with the location of at least the smaller ruins as any other factor: they generally lie against a sheltering hillside. Whether the enclosed pueblo was a sufficient protection, or whether protection was not needed cannot be answered from our data.

The historical position of another cultural trait, the use of obsidian, can also be roughly given. Our experience conforms with Kroeber's that obsidian is found only at relatively late ruins.



GENERAL SUMMARY.

It seems worth while briefly summarizing the preceding pages in order to emphasize the distinction between the body of data of which we are reasonably sure and the outline chronology which is in part an hypothetical structure. It does not seem fair to leave an impression of greater certainty in the results than the data seem to us to warrant. At the risk of repetition then, we will briefly indicate what we believe these data show.

Let us first turn to the methodological limits imposed by the type of remains. We have seen that the natural advantages of the region under discussion are somewhat limited. Water and arable lands are by no means uniformly distributed over its extent; rather, the combination of a copious water supply with adjacent fields is found at only a few spots. As a result the structures now in ruins seem to have had a transient occupation. With the exception of certain historic and related sites the refuse heaps at these ruins were uniformly shallow. Four of the ruins, Hawwikku, Kettcippawa, Kyakkima, and Mattsakya, were identified years ago as among the "Seven Cities of Cibola." At one, Mattsakya, a deep refuse heap was found in which the potsherds could be traced back in gradual transitions to and through another deep heap at a neighboring ruin, Pinnawa. But here was the end of direct stratigraphic information, and from this point on we were forced to fall back on the uncertain method of hypothetical seriation.

Nevertheless, the body of data available for such a seriation is, we believe, on a par with that obtained by stratigraphic methods. We have no reason to doubt that samples of potsherds collected from successive levels of the ash heaps present us with valid chronological indices. Why then cavil at the use of similar samples from the surface of the ash heaps? We have demonstrated above (p. 254) that it is possible to collect surface samples approximating in accuracy to those from refuse heaps; in fact, supposedly identical surface samples differ no more among themselves than a corresponding series of refuse heap samples. We have analyzed such potsherd samples from each of the ruins for the proportions of their constituent types. Aside from their value in our hypothetical scheme, these collected data have an absolute value in that they characterize each ruin with some precision.

A suggestion for ranking these data in seriation is contained in the short stratigraphic series: there corrugated ware is seen increasing steadily from complete absence in modern Zuñi to fourteen percent at the base of the Pinnawa ash heap. But we cannot straightway rank all the data on the basis of corrugated percentages, although the unity of types in all the ruins suggests doing so, because we find that the values fall into two groups. In each group corrugated ware ranges from zero to about fifty percent, but in one it is accompanied only by black-on-white ware, in the other by black, red, and buff wares. The second group is further subdivided by the presence at some of the ruins of glaze-decorated potsherds as well as painted wares. Among these are the historic sites and the affiliated ruins which furnished stratigraphic information. This suggested a sequence in which corrugated ware rises from zero to about fifty percent (with only black-on-white ware present), and then drops back to zero again, while painted ware is being followed by glazed wares (the second general group). This suggested sequence was then ready to be checked by observing simultaneous variations in wares other than corrugated.

Nothing can be said as to the validity of the first half of our sequence, the "black-on-white series," beyond the fact that it seems plausible. But for the remainder of the sequence the checks employed give fairly certain First, concomitant variations occur in the wares accompanying corrugated. Second, the variations of individual values from the general trend of the sequence are not beyond the limits of chance. Third, a continuum of style is seen in three-color decoration which appears first at the later ruins of the "painted ware series" and continues on through the "glazed ware series." But while the general sequence is checked in its parts, it develops that a group of values belonging late in the series is missing; that is, we simply failed to cover sufficient territory in our survey to include ruins of this period. According to the available literature, such ruins probably lie further down the Little Colorado. But so long as such an hiatus remains in our data, we cannot be certain that the separated sections of our series are parts of a single historic sequence. hypothetical sequence for the Zuñi country parallels that of the Rio Grande region. But if there has been a common development over a large section of the Southwest, we are still uncertain, for we may well be dealing here with parts of two separate sequences. The case for our chronological outline must rest at this point until the hiatus can be investigated. But until we then know the value of these data for this particular chronological scheme, we can at least be sure that they have an absolute value outside of it.

The suggested pottery sequence closely parallels that of the Rio Grande both in the order in which the several decorative techniques were used and in the style of decoration. It differs principally in the tendency to vary color combinations rather than decorative technique, and to use painted decoration in preference to glaze. Glaze decoration appears to have been



regularly substituted for certain painted decorations, but was always rather limited in use; hence we judge that glaze decoration was a borrowed trait.

So far we have used only pottery data in erecting an outline chronology in order that we might use architectural data as an independent check. When the ruins are ranked according to the pottery scheme, a parallel sequence of architectural types was found: first, probably slab-house structures (p. 228), then small houses, and finally rectangular and circular pueblos. This may be taken as a confirmation of the pottery scheme, since all students have suggested this as the probable course of development. The pueblo type appears more or less synchronously with the introduction of decoration in three colors: it probably did not develop in this region, but seems to be a borrowed trait.

Certain general shifts of the center of population have taken place. We have only a few scattered ruins belonging to the earliest period ("black-on-white series"). During the following period of the "painted ware series," the focus shifted from the lower half of the Zuñi Valley eastward to the continental divide where it remained throughout the period of the "glazed ware series." With this shift the pueblo appeared as the prevailing architectural form. The next ruins for which we have data are the historic ruins and others closely related. Again there has been a shift, for these center back in the lower Zuñi Valley. The available information suggests that had our survey been carried for some distance further down the Little Colorado Valley, of which the Zuñi is a tributary, we would have found ruins immediately antedating the historic ruins and probably intermediate between them and the ruins centering in the continental divide. This may mean that there was a general movement westward and then a return eastward to the historic location.

In short, the data assembled in the preceding pages are a reasonably certain characterization of the ruins visited. The suggested chronology may be valid in outline and even quite correct in part, but it cannot be accepted as more than indicative while an integral part of the territory remains unsurveyed. The publication of the results to date seems wholly justified as marking the completion of one important step in the establishment of Zuñi chronology, but particularly as an exposition of archaeological method.

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ANTHROPOLOGICAL PAPERS OF THE AMERICAN MUSEUM OF NATURAL HISTORY VOL. XVIII, PART IV

NOTES ON SOME LITTLE COLORADO RUINS.

BY

LESLIE SPIER



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RUINS IN THE WHITE MOUNTAINS, ARIZONA.

By Leslie Spier.

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WHITE MOUNTAIN POTTERY.

In an attempt to trace the past of the Zuñi people, a considerable section of territory adjacent to their pueblo in New Mexico and a much larger section in Arizona have been surveyed. The three earlier papers in this volume report results obtained by Dr. Kroeber and myself in the drainage area of the Little Colorado, that is from the continental divide in New Mexico westward to Winslow and from the Santa Fé Railroad south to the Mogollon Rim. During the past summer, the White Mountains and the Verde Valley lying between the Mogollon Rim and Salt River were added to this area. This leaves the Tonto Basin as the only considerable unsurveyed portion of an otherwise continuous area. Since it was our intention to maintain this throughout as an empirical study, we have found it convenient to issue reports on the several sections of this area as they were visited. It is now possible to sketch its development in general terms and to particularize on Zuñi participation.

In my second paper, "Notes on Some Little Colorado Ruins," I showed that ruins in the Little Colorado drainage area were distinguished by the presence of yellow or buff pottery: it occurs in such quantities that it might be called the buffware area. The surveys of the past summer suggest some minor modifications and additions to this area. Only two ruins in the White Mountains, No. 261 and Hough's No. 134, contained buff pottery and then only a small amount. I have been shown buff pottery said to have been obtained further west in the upper Tonto Basin close under the Mogollon Rim. Both of these additions extend the area a slight distance out of the Little Colorado drainage and into that of the Salt. On the other hand samples of buffware in the Mearns Collection from the Verde Region must have been obtained from the eastern section close to the edge of the Little Colorado Valley, since I found no such ware at any of the ruins I visited in the Verde Valley proper. None of these changes essentially affect the distribution of this ware.

In some of these ruins on the Little Colorado buffware is associated with red pottery decorated externally in a characteristic fashion. On bowls this commonly consists of a panel encircling the bowl near its edge, built up of two broad bordering bands in black between which geometric figures are drawn in fine lines with white paint. One well-defined figure of this type may be called "dentiform," for want of a

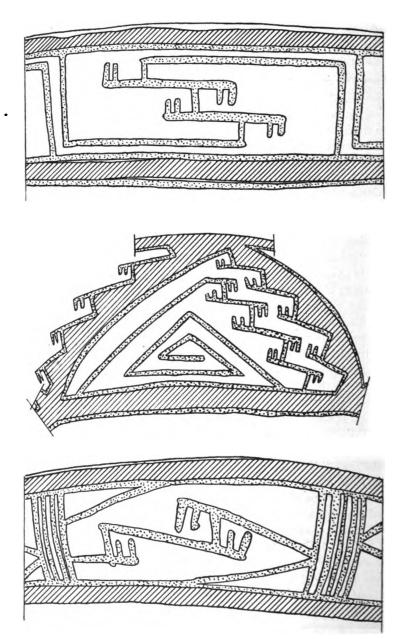


Fig. 1. "Dentiform" Figures from Wallace Tank Ruin (No. 203).

better name. This consists of a straight line bearing two or three short lines at right angles to it at its end and it occurs in a variety of combinations¹ (Fig. 1).

This figure is found on pottery from the following ruins: No. 203, the Wallace Tank Ruin, No. 213, Four-Mile Ruin, No. 214 at the junction of Showlow and Silver creeks, No. 217 at Showlow, and at the Homolobi, Chevlon, and Chaves Pass ruins, as well as appearing in Mearns's sherds from the Verde.

To judge from their pottery, pueblo ruins in the White Mountains undoubtedly belong with this Little Colorado group. More specifically, two ruins contain buffware and at four others I have seen the "dentiform" decoration, viz., Nos. 253, 255, 264, and 267, while it may also occur at two more, Nos. 228 and 274—I am not sure. This gives us a series of connecting elements: the White Mountain ruins share the "dentiform" figure with the Little Colorado ruins, and these latter have the buff, black, and black and red-on-white wares found on historic Zuñi sites.

On the assumption that this is the actual historic sequence I have dealt with the White Mountain pueblos as with the Hecota'utlla group of ruins in the Zuñi country.² The percentages of the various wares in these pueblos is given in Table I. It will be noted that blackware has been omitted. Even among the Little Colorado ruins blackware was extremely difficult to distinguish from corrugated, while here separation was not at all feasible. In Table II the ruins are ranked according to the percent of corrugated and the pottery is grouped by ground or body color. There we see that when corrugated disappears as the dominant type, redware takes its place while whiteware remains stationary. I have also indicated the pueblos at which three color painted ware and three color combination glazed and painted ware occur. From this it appears that the sequence of techniques was first the introduction of three color paint and then of combination glaze and paint.



¹ Fewkes figures an excellent example from Four-Mile Ruin in Plate LXIII, c, of his "Two Summers Work in Pueblo Ruins" (Twenty-second Annual Report, Bureau of American Ethnology, part 1, Washington, 1904).

² I do not know that anyone has suggested that the Apache, who now occupy the White Mountains, built these structures. In fact Hodge has shown that the region was uninhabited in the sixteenth century (American Anthropologist, VIII, 1895, 230). None of these ruins then can date to historic times.

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TABLE I. Percentages of Pottery at Pueblos,

Size of Sample		73	120			8	105	34	160	89	113	61	100	133	102	75		22	29	210	103	8	49	137	156	
Tularosa	Red		×	×		×																				
	White					<i>~</i>									×				×	×	×					×
	Corru- gated					×								×	×	×	×	×	×							×
od Ware	Buff																-									
Three Color Glased & Painted Ware	Red		92	×		œ			4				18	22	18	4	×			ı,	9	13		12	8	×
Glased	White						_															-				
are	Buff																									
Two Color Glased Ware	Red		7		×										က							ro				
F.0	White					က			-			•										×		-		
or	Buff																									
Three Color Painted Ware	Red	ro	18	×		8	∞		83		12	88	9	38	88	4	×	4		16	22	6	18	ន	18	×
T.G.	White																									
or are	Buff								×											-						
Two Color Painted Ware	Red	7	19	×	×	17	œ	9	10	73	27	33	5 6	22	Ξ	6		4	ıÇ.	21	6	13	4	12	14	×
Pa	White	15	-			15	8	6	2	87	16	70	က	13	15	15	×	77	14	9	19	9	83	15	2	
Corru-		73	88	×	×	37	2	82		22	45	18	13	18	20	89	×	89	81	45	36	72	ଛ	37	28	×
Site		225	228	228-upper	228-lower	229	237	238	Hough 134	246	247	249	250	251	253	254	255	258	259	261	263	264-upper	264-lower	267	274	275

TABLE II.

All of these results are a striking parallel of conditions in the Hecota'utlla group near Ramah, where redware displaced corrugated ware with
whiteware remaining a constant element, while at the same time the
sequence of new techniques was first three color paint and then combination glaze and paint. Both series parallel the sequence of techniques
found by Nelson and Kidder in the upper Rio Grande Valley.

Changes in the shape and size of the pueblo are not marked, but the tabulated data suggest that the later pueblos were somewhat the larger, as was the case in the Hecota'utlla group, and that the pueblo built as a hollow rectangle also became more common.

Percentages of pottery in the small ruins in the White Mountains are given in Table III. The data are too few for treatment similar to that for the pueblos.

A number of ruins in this area contain Tularosa-San Francisco pottery: one cave, Site 239, contains nothing else. This pottery is of three types: corrugated, with narrow coils, fillet edge and polished black interior; plain redware also with a fillet edge and polished black interior; and whiteware decorated with a black pigment which is either a very glossy paint or glaze. I have noted the presence of these types in the tables. Apparently there is no chronological distinction between the several types. If we consider these data together with that for Little Colorado ruins however, it appears that Tularosa wares occur in the small ruins of both areas—presumably the earliest—and in pueblos of the middle period in the White Mountains, but not in the Little Colorado pueblos and not on historic Zuñi sites. This temporal relation suggests that the glossy black paint on the whiteware may be historically related to an early glaze.

At none of the ruins in the White Mountains were deep refuse heaps found, so that stratigraphic work was out of the question. Sherds obtained from the upper and lower parts of refuse heaps in Sites 228 and 264 show some differences, but these do not appear significant to me.²

² The question raised on p. 361 whether buffware appears only in the upper part of the ash heap at Homolobi No. 1 near Winslow is answered by the following data:—

	Corru-	Two Col	Size of						
	gated	White	Red	Buff	White	Red	Buff	Sample	
Surface (percent)	41	6	11	41		1		145	
Upper Part	×	×	×	×	<u> </u>	×	×	İ	
Lower Part	×		×	×	<u> </u>]		

A large proportion of the corrugated ware is buff in color.

¹ This volume, pp. 342-343.

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TABLE III. Percentages of Pottery at Small Ruins.

Tularosa Ware Size of	Corru- gated White Red	99	111	:	42	×	7 114
	Buff gate		<u>:</u>	× ::	- - :	× :	×
Three Color Glazed & Painted Ware				: ×			
Glased &	Buff White Red				:	:	
lor /are	Buff		: -:	:	: -:	:	
Two Color Glased Ware	Buff White Red	:	:	:	:	:	
	White	:	:	:	<u>:</u>	:	
Color Ware	l Buff		:	_	<u>:</u> -:	_:	
Three Color Painted Ware	White Red		<u>:</u>	× :	:		r.
	<u>'</u> -	: :	:	:	:	- :	
Two Color Painted Ware	d Buff	ĺ	_: -:	:	.=		_
Two C Paintec	White Red	56 6	: 81		36 5	35 13	1
Corru- gated	Wh	88.	82	×	59 30	46 3	50 41
Site		223	224	255	260	220	27.9

Another feature shared with ruins in the Zuñi and Little Colorado areas is the poor quality of the glaze.¹

¹ None of the ruins I visited in the Verde Valley—northward from Camp Verde—belongs with the groups described, except by reason of an architectural similarity. Here are cliff-houses and pueblos of the regular rectangular room type built of stone like others of the northern Pueblo area, but with crude pottery. These vessels contain a large amount of stone tempering, are soft and crumbling, walls thick, unpolished, and for the most part unslipped. About two-thirds are reddish, the remainder black; but these may not be separate varieties. With these is a very small quantity of black-on-white and corrugated ware. Neither Mindeleff nor Mearns describe pottery from these ruins.

NOTES ON THE RUINS.

WHITE RIVER.

The White Mountains along the upper reaches of the North Fork of White River are too rugged to permit extensive occupations. In the general neighborhood of Cluff Cienega, however, ruins may be located.

Site 223. A small ruin lies on the west side of the road from Cluff Cienega a mile or so above Robert's Ranch Ranger Station. It is built of rough lava blocks; rectangular, 30 by 20 feet; and has been partly excavated. A sample of the few sherds seen on the surface was collected at random.

Hough 129. A small pueblo ruin near Interior Sawmill was excavated by Dr. Hough.¹

Site 224. The road to Fort Apache runs along a ledge or plateau a considerable distance above the North Fork. A number of small-house ruins are scattered along the ledge. A small-house ruin, like Ruin 223 and measuring 20 feet square, is on the east side of the road about five miles south of Interior Sawmill. A random collection of sherds was made. Two more similar ruins are a short distance south.

Site 225. A small pueblo of the same rough construction lies a mile south of No. 224 on the east side of the road. It measures 100 by 60 feet, possibly two stories high at the center, with a 60 foot wing at one side. An excavated room is roughly 10 feet by 12. Two more small-house ruins are within a mile south and a third half a mile further on. There may be others in the vicinity.

Hough 131. Pueblo ruins noted by Hough² and described by Bandelier³ are on the old Cooley ranch, eight miles above Fort Apache.

Site 226. Two small peaks on the east side of North Fork opposite the agency at Whiteriver are covered by an indefinite small ruin built of sandstone. Skeletons have been found to the southeast. Corrugated, black-on-white, and a little black-on-red pottery were seen.

¹ Hough, Walter, "Antiquities of the Upper Gila and Salt River Valleys in Arizona and New Mexico" (Bulletin 35, Bureau of American Ethnology, Washington, 1907), 80: "Archeological Field Work in Northeastern Arizona. The Museum-Gates Expedition of 1901" (Annual Report for 1901, Smithsonian Institution, pp. 279-358, Washington, 1903), 297.

² Hough, "Antiquities of the Upper Gila and Salt," 80.

³ Bandelier, A. F., "Final Report of Investigations among the Indians of the Southwestern United States. Carried on Mainly in the Years from 1880 to 1885" (Papers, Archaelogical Institute of America, American Series, vol. 4, part 2, Cambridge, 1892), 394.

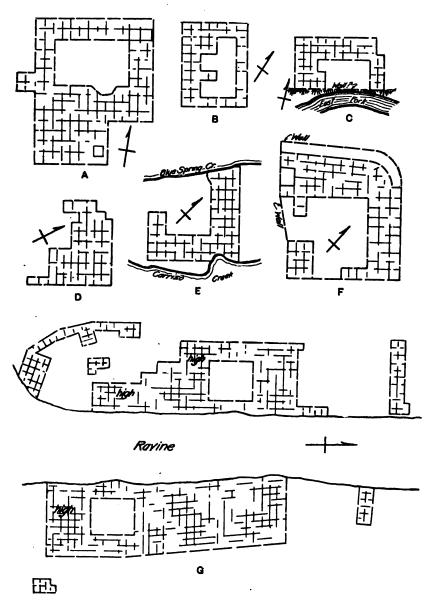


Fig. 2 Plans of Ruins. a, Ruin 228; b, Ruin 229; c, Ruin 237; d, Ruin 253; e, Ruin 264; f, Ruin 274; g, Hough's Ruin 134. Scale: 1 in. =135 ft.

Site 227. A short distance south is a small ruin just above the Whiteriver bridge. It was built of small sandstone blocks, but is nearly leveled; measures 20 by 35 feet (nine rooms) with an additional room alongside. There may be a circular kiva, 20 feet diameter, to the south. Corrugated, black-on-white, black-on-red, and a little black and white-on-red pottery was seen.

Site 228.1 A large rectangular pueblo is situated a mile and a half east of Fort Apache on the south side of East Fork just above the junction with Seven Mile Creek.2 The structure measures about 200 feet by 170, with a rectangular court 100 feet across (Fig. 2a). It was built of sandstone blocks with regular courses of chinking. Several rooms have been dug into by Dr. Hough and others. Sherds are relatively scarce on the surface and the ash heaps at the southeast corner and to the west (the cemetery) are only 12 to 18 inches deep. Sherds were collected from the surface and the upper and lower parts of the ash heaps. Excavations in the cemetery have now cleared it completely. Two burial urns. ollas covered by inverted bowls, containing partly burned human bones were found: one also contained part of a bowl. Two adult skeletons were found: extended, head to north, face up, symmetrically placed side by side, left arms akimbo, right arms extended, that of one skeleton underneath the other. A bowl lay on the right shoulder of one. A skeleton of a child had a square turquoise pendant near the right ear, a broken arrow point, and small shell beads at the wrist.

Site 229. Half a mile east of No. 228 on the higher ground on the opposite side of East Fork is a rectangular pueblo. It is not so well constructed as No. 228. It measures 115 by 90 feet with a rectangular court (Fig. 2b). Fifteen yards away is a structure of one or two rooms. Near this were found two burial urns containing burned bones. The ash heaps close to the east side of the pueblo have been dug up. Sherds are not plentiful.

A small-house ruin lies on the opposite side of East Fork. Turquoise has been taken from a spring, where there may be a small-house ruin, on a mesa in the southeast angle of Seven Mile Creek and East Fork.

Sites 230-233. Four small-house ruins are on the bluff north of East Fork about one quarter mile west of East Fork Day School. Three



¹ Sites 228 and 229 are evidently Hough's 133 and 132 ("Antiquities of the Upper Gila and Salt," 80-81), since there are no ruins on the North Fork as he describes but in corresponding positions on the East Fork.

² Bandelier, ibid., 395.

houses had only one or two rooms; the fourth three rooms and measured 30 by 20 feet. Pottery is corrugated and black-on-white.

Sites 234-236. Across East Fork from the Day School are three similar small-house ruins; two with two rooms, one with one. Pottery is similar.

Site 237. A pueblo ruin lies on the brink of the bluff which rises on the north side of East Fork one mile east of the Day School. It is bracket-shaped, with the open side at the bluff edge possibly closed by a wall; is built of rough sandstone and lava boulders, and measures roughly 120 by 70 feet (Fig. 2c). The cemetery to the west has been dug into. A random collection was made from among the few sherds seen.

A small cliff ruin, possibly only a storehouse, may be seen high up on the cliff face about a mile upstream.

Site 238. A pueblo ruin stands in the bottom land on the north side of East Fork about two miles or more above Site 237. It was built of sandstone; is now low and indefinite, but appears to be bracket-shaped, the open side facing south. The court is about 60 feet square, the arms roughly 60 feet long by 20 and 40 feet wide, and the rear section 165 feet long extending beyond the side building to the east. Sherds were collected at random here.

Site 239. Eight or nine miles above Fort Apache or about a mile above Site 238 is a cave in the cliff north of East Fork. Walled storage chambers are located near the entrance and a burial site 200 (?) feet within. The cave has been ransacked, but I found unburned and calcined bones, sticks, charcoal, corncobs, squash seeds, and piñon nuts, as well as yucca cords, strung and loose shell beads, and a bone pendant. The pottery is the corrugated and plain red with polished black interior of Tularosa type.¹

Sites 240-242. There is said to be a little ruin a mile or so above this cave, a pueblo ruin on Ryan's ranch about three miles north of Sharp's ranch, and also at Bill Ryan's ranch on Little Bonito Creek.

Site 243. A small-house ruin, 60 by 20 feet, is on the ledge on the west side of North Fork opposite Fort Apache hospital. Pottery is corrugated, black-on-red, and black and white-on-red: sherds are scarce.

Site 244. A small ruin of a few rooms, 40 feet long, stands on a rise a quarter mile east of Canyon Day School on the north side of White River. Sherds are corrugated and black-on-white.

¹ Specimens in the Field Museum referred to by Hough, ibid., 81, may be from this cave.

Site 245. A little lava peak rises just west of the Day School; on it is a small ruin, indefinite but conforming to the top, 100 feet long by two or three rooms wide. Part of the ruin is also on the shoulder of the peak. Pottery is corrugated, black-on-white, black-on-red, and black and white-on-red.

There are pictographs on the opposite (west) face of the gorge and two small-house ruins on the ledge above.

Site 246. A small ruin is on a hilltop on the south side of White River a half mile west of the Day School. Built of sandstone and fairly well defined, it is roughly a rectangular block 75 feet by 85, with a two-roomed structure nearby.

There are said to be small-house ruins about Chiricahua Beef. Spring, which is near the top of the mesa about a mile south of Site 245.

Site 247. A small pueblo lies on a hill at the eastern foot of Kelley's Butte, about two and a half miles west of Canyon Day School. It is roughly rectangular, measures 120 feet by 55, with two outlying buildings of one and three rooms. Sherds were collected from the surface at random.

Hough 134. Opposite Fort Apache is a plain which extends to the west to Saw Tooth Mountain. Near the eastern foot of the peak, a mile and a half from it by air line and three miles west of the Day School, is a large pueblo ruin lying on both sides of a ravine, forty of fifty feet deep.² It was somewhat rambling, built of sandstone, and two stories high in the highest parts. East of the ravine the main block covers an area 325 by 100 feet, on the west side the main block is roughly 250 by 100 feet (Fig. 2g). Sherds are plentiful around the eastern block and undoubtedly were dumped into the ravine, whence they were carried by storm flow. Nowhere could stratigraphic work be done. Rock walls of the ravine just above the ruin would have served for an excellent tank: there is no water within several miles today. Sandstone and lava manos and metates were seen.

Two ruins of one room each lie in the plain a quarter mile east of this pueblo.

Site 248. There is said to be a pueblo ruin built of lava blocks together with small-house ruins at Navajo Bill Spring (at the head of Priebe Creek?) about eight miles west of Canyon Day School.

There are said to be a few small ruins and caves south of Black River below Turkey Creek and above White River.

¹ This or the next site may be No. 135 of Hough, ibid., 81.

² Hough, ibid., 81; Bandelier, ibid., 396.

CEDAR CREEK.

Site 249. The Cibicue road skirts the north end of a high and very narrow mesa about three and a half miles east of Cedar Creek or two miles west of Saw Tooth. The southern end of this mesa is capped by a small pueblo ruin which conforms to the outline of the mesa. It is roughly a right-angled triangle; one side 100 feet long, the base 70 feet, and tapering to one room 10 feet wide. There is no water nearby and the mesa walls are sheer.

Site 250. Two miles west in the flat there is a circular pueblo built of sandstone and still standing high. In plan it is nearly a perfect circular ring 170 feet outside diameter; three rooms wide on the southern sector, elsewhere two wide; rooms placed radially. It was probably two stories high. Lower structures fill the greater part of the interior court. Three or four smaller structures are on a hillside a few yards west. The largest is L-shaped; the long arm 180 by 50 feet, the shorter 75 feet long and one room wide for the most part. So far as an inspection during a storm would permit, I judge that the sherds at these structures are the same as those at the circular pueblo. Sherds are not abundant.

Site 251. A dry wash joins Cedar Creek just south of Silver Butte. On the point of a mesa in the fork is a pueblo ruin consisting of a rectangular block 135 by 100 feet, two or three stories high, and with a small court in the center; this forms one end of a court the two adjoining sides of which are 180 feet long by 33 and 42 feet wide, and the fourth side formed by wings of the side buildings which nearly meet. These buildings were one story high.

There is said to be a small ruin and terraced slopes on a small peak near which the road passes three miles west of the Cedar Creek crossing.

Site 252. A ruin of about five rooms is on the bottom land of Cedar Creek opposite Silver Butte. Pottery is corrugated, black-on-white, black-on-red, and black and red-on-white.

A small ruin of a few rooms is said to be on Silver Butte.

Site 253. A small pueblo ruin is on a mesa south of the junction of West Cedar Creek. It is somewhat L-shaped (Fig. 2d), since the main portion was two or three stories high, with a wing of one story. Its overall dimensions are 115 by 115 feet.

There are said to be no ruins on West Cedar Creek, although the Apache have farms there.

Site 254. A small ruin is on a hill on the east side of Cedar Creek near the junction of Middle Cedar (Arrow) Creek. Although it has been

rebuilt by Apache like many others, the original walls are fairly distinct. It is rectangular, 65 feet by 40.

Site 255. A small cliff ruin is located on the east side of Cedar Creek about a mile and a half above the Arrow Creek junction. A single line of rooms is built in a shallow cave, which range in width from 10 feet at one end to 4 feet at the other, and have lengths of 10 and 6 feet. The sandstone walls still stand and rafters are present 5 feet above the floor. Walls show alternate courses of chinking and are plastered inside. Interior doorways measure 36 by 18 inches, are 6 inches off the floor, and have stone and stick lintels. Sherds are very scarce.

Site 256. On the west side of Cedar Creek about a mile and a half above Site 255 is a small semi-cliff-house against the base of a cliff. Both end walls of a single room, 12 feet long, stand, but no front wall. No sherds were seen; it may have been a field shelter.

Site 257. A series of oval storage chambers were seen a mile (?) above the junction with Cedar Creek on the west side of Arrow Creek. Sherds here are corrugated, black-on-white, and redware.

Two small ruins are reported to be in the bottom land a mile or so above this.

Site 258. A small ruin lies on a hill on the east side of Arrow Creek about three miles above its junction with Cedar Creek. It measures 75 by 30 feet, but is low and indefinite.

Site 259. A small pueblo ruin stands on a high hill on the east side of Arrow Creek more than half a mile north of Site 258. It is low and indefinite, but apparently consists of two blocks, the main portion 90 by 100 feet, the other L-shaped with 50 foot arms, 25 feet wide.

Site 260. A trail leads from Arrow Creek over Big Mountain and down Corduroy Creek to the settlements on Forestdale Creek. On a slight rise near the northwest base of Big Mountain is a small indefinite ruin, roughly built of lava blocks. Its total length is 60 feet. Nearby is a lava boulder with a cup-like milling hole.

CARRIZO CREEK.

Site 261. A pueblo ruin is located on the north side of Forestdale Creek where it is reached by the old road from Adair. Hough has given an extended description¹ and notes three more ruins in the vicinity.

¹ "Archeological Field Work in Arisona," 289–297, also "Antiquities of Upper Gila and Salt," 80, No. 127.

Site 262. A small ruin lies south of the Cibicue road about two miles west of Carrizo Creek. There are two buildings, 40 by 25 feet and 20 feet square. Pottery is corrugated and black-on-white.

Site 263. On a knoll on the east side of Carrizo Creek perhaps two miles below Limestone Creek is a small D-shaped pueblo ruin, consisting of a rectangular portion 120 by 75 feet with a semicircular building in the rear leaving a court 75 feet across. The rectangular block is a high pyramid, but probably nowhere more than one story high as Bandelier shows.¹ The semicircular part is level, one room wide and also one story high.

Nearby is a small-house ruin, now nearly obliterated.

Another ruin lies a mile upstream on the same side.

Site 264. A pueblo ruin is situated in the junction of Blue Spring Creek with Carrizo Creek. It is L-shaped, the main block 130 by 40 feet, the arm 85 by 35 feet (Fig. 2e), but portions have been carried away by both streams. Considerable refuse appears on both banks but this is back-fill in the rooms, all outside refuse heaps having been carried away. Sherds were collected at random from the uppermost and lowest parts of this back-fill. A skeleton lay four feet under the outer wall on the original surface; on top of the head was a red bowl containing a small bowl, dipper, and jar. Another skeleton was found on the floor of a refuse-filled room with turquoise at neck and a corrugated bowl at feet.

A small ruin is said to lie on the ledge west of Carrizo Creek opposite Site 263, but I could not find it.

Site 265. On the point of the mesa in the forks behind Site 263 is a small ruin of half a dozen rooms. Pottery is corrugated, black-on-white, and redware.

Site 266. South of Blue Spring Creek opposite Site 263 is a small ruin of four partly excavated large rooms. Sherds are much like those of the pueblo ruin.

Two small ruins are said to lie on the bottom land of Carrizo Creek, one near the junction of Deer Spring, the other a mile above. Similar small ruins are said to be on the points of mesas in the vicinity of Phoenix Park and Buckskin Creek further up Carrizo Creek.

CIBICUE CREEK.

Site 267. A pueblo ruin stands in the bottom land near Cibicue Creek opposite the Mission. The pueblo is D-shaped, with a base 140

¹ Bandelier, ibid., 399-401.

feet long and measures 145 feet transversely. It seems to have originally enclosed a large court but this is now entirely filled by lower buildings. All interior walls are indefinite. Some ash and sherds show in the plowed field southwest.

Site 268. A small ruin, 40 feet by 30, is on the east side of Cibicue Creek about 200 yards above the Day School. Pottery is corrugated and black-on-white.

A still smaller ruin is said to lie on the point of a low mesa on the west side of Cibicue opposite this one.

Site 269. A small ruin consisting of two buildings of two rooms each is on the west side of Salt Creek, nearly three miles above the Day School. Pottery is corrugated and black-on-white.

Site 270. An eighth of a mile above the last is a larger ruin. This is three rooms (25 feet) wide, one row extending 95 feet, the others 50 feet.

Site 271. Half a mile above the junction of Salt Creek on the west bank of Cibicue Creek is a curious small ruin. It seems to be only partly finished, yet some sherds are scattered about. A single line or row of stones marks the walls, like the boulder-marked sites of the Rio Verde. One room, 13 by 33 feet, has no fourth wall; another building has a room 16 feet by 13, with the side walls extending 8 feet more and without a fourth wall. These might be passed over as unfinished buildings, but for the association with somewhat unusual corrugated and black-on-white pottery.

Site 272. Half a mile west of Site 270 and near the north bank of Salt Creek is a small ruin of the same sort. One building is an L with arms 35 and 40 feet long; nearby is a second consisting of a three-sided room 15 feet by 40. Sherds are also similar.

Site 273. On a ridge 100 yards north is a small ruin, 45 feet by 20, with outlying rooms. The pottery is corrugated, glossy black-on-white, and black-on-red.

There are said to be no ruins further up Salt or Cibicue creeks, although Apache farms are on the latter. Ruins were also spoken of as "way down" Cibicue Creek, probably near Salt River.

Site 274. A pueblo ruin stands on Blue House Mountain about a mile east from the summit. It covers a hilltop with a low encircling wall which forms a terrace. The main building is L-shaped with arms roughly 150 feet by 50 and 100 feet by 45 (Fig. 2f).

A ruin was said to be located southwest of Blue House Mountain and south of Brush Mountain.

Site 275. There is a pueblo ruin at Grasshopper Spring west of Cibicue Creek, consisting of one large building divided by a flowing spring with numerous small buildings scattered around.

Ruins reported on the Canyon Creek drainage, including a large cliff-house on Oak Creek, were not visited.

HISTORICAL RECONSTRUCTION.

Taking the data for the whole surveyed area, I suggest the following scheme of historic interrelations.

In the first place, there are in this area a fairly large number of small ruins. The earliest type (p. 293) was presumably the oval, semi-subterranean "slab-house" which was found in the Zuñi Valley. Pottery here was simply corrugated and black-on-white. The small rectangular house which followed it is found in all parts of the area. The pottery associated with this is corrugated, black-on-white, and black-on-red. The differences between the small ruins lie largely in the decorative style: a difference too slight to permit of advantageous study at present. Some Tularosa pottery is also found in these ruins.

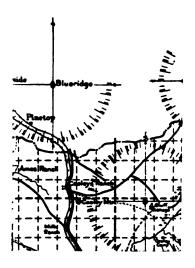
However, when we consider the pueblo ruins, some fairly definite historic relations may be seen. We first find two groups of ruins; one in the White Mountains, the other the Hecota'utlla group centering around Ramah in the upper Zuñi Valley. Although these two regions are some distance apart, there are no intervening barriers. These groups have had a parallel development. At the outset corrugated was the prevailing ware but was displaced by redware, while whiteware remained throughout a relatively constant minor ware. Corrugated may have been slightly more prominent in the White Mountains, whiteware at Ramah. Three-color painted decoration—in this case the addition of decoration in white paint to the black paint figures on redware—appears in both groups under the same conditions, and presumably at about the same time. Next glaze technique appears in both groups, black glaze being substituted for black paint without any marked change in decorative style. The glaze is applied to white and red pottery giving us the two color glaze technique, but at the same time it is used in three color decoration. Hence the development here did not parallel that in Nelson's Tanoan area, where two-color glaze appeared as a definite type before three-color combination glaze and paint. Here glaze was clearly introduced from outside, presumably from the upper Rio Grande. In this connection it is significant that the glazes of all periods in this area are distinctly inferior to those of the Rio Grande. At about the same time the pueblo was introduced as a definite architectural type. It does not seem to have grown out of the small ruin in this area—at least this is distinctly so in the Ramah region. Pueblos in this region are somewhat larger than those in the White Mountains.

These two ceramic groups present similarities in decorative treatment; at least this is noticeable in redware. But one difference may be pointed out in the white paint figures; at Ramah broader lines and more diagonal step and volute patterns were used than in the White Mountains. Tularosa pottery is also found in both groups of pueblos as in the earlier small ruins.

Now come shifts of population: the Ramah group disappears from the area I have surveyed and Tularosa pottery never appears again. The White Mountain group moved northward to the Silver Creek section, where a new development began, shared with the group on the middle Little Colorado centering around Winslow. During this period corrugated ware continued to disappear but began to be replaced by plain blackware, which is clearly a derivative of it. Redware becomes the dominant type—possibly half of all pottery—and again declines. Here, as in the White Mountains, the "dentiform" figure appears on it. Small quantities of whiteware continue to be made. Buffware, which appeared in a few pueblos of the White Mountains is now found in larger quantities. It is a very minor constituent in the Silver Creek ruins, but a much larger one in the western group and also in historic Zuñi pueblos. The significance of these proportions is not clear, possibly because my survey did not extend north of the Little Colorado where there are ruins also containing buffware. The pottery of the Silver Creek region is more nearly like that of the earliest Zuñi site near Zuñi Pueblo. This would imply that the Zuñi have moved up the Little Colorado-Zuñi Valley to their present location. A possible explanation—I do not mean to suggest that it is necessarily the fact, since I have not investigated the buffware area north of the Little Colorado—is that buffware did not develop to any extent until the Zuñi reached their historic habitat. This would presuppose a second group of people remaining on the Little Colorado. Fewkes and Hough believe that these western ruins relate to the Hopi or some constituent group of that tribe.

Let us return to the problem with which we set out: what could be learned of the former communities of the Zuñi that bears on their present life. Formulating this question more specifically we were, first, to investigate the relations between the present pueblo and the several pueblos attributed to the Zuñi of the period of the conquest by early documents and native statements; and, second, to discover their prehistoric location and cultural leanings. Dr. Kroeber, who brought a new method to the attack, showed that the situation was even more complex than the documentary confusion implied. My excavations into the base of

modern Zuñi revealed its growth since the foundation just prior to the Spanish advent. Taking the earliest pottery types there as a point of departure, we concluded that the Zuñi inhabited the pueblos, Hawwikku, Kettcippawa, Kyakkima, and Mattsakya, together with the unidentified "Aquinsa," immediately before concentrating in their present town. All of our evidence indicates that neither Pinnawa nor Hallonawa were Zuñi ruins of the historic period as had been supposed by earlier investigators. The solution of the second part of our problem is given in the foregoing historical reconstruction. The Zuñi originally lived further to the westward and their pottery at least showed close resemblance to that of the Hopi.



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